COLONY OF MAURITIUS

Annual Report

OF THE

Department of Agriculture

1951

[PRICE : Rs. 1.25]

PRINTED AND PUBLISHED BY
J. ELIEL FELIX, GOVERNMENT PRINTER,
PORT LOUIS, MAURITIUS
NOVEMBER 1952

COMMONWEALTH MYCOLOGICAL INSTITUTE
7 JAN 1953

No. 18 of 1952

COLONY OF MAURITIUS

Annual Report

OF THE

Department of Agriculture

1951

PRINTED AND PUBLISHED BY
ELIEL FELIX, GOVERNMENT PRINTER,
PORT LOUIS, MAURITIUS
NOVEMBER 1952

Annual Report of the Department of Agriculture for the year 1951

Agricultural Policy

In my annual reports for 1948 and 1950, I defined agricultural policy in general terms and indicated the economic, ecological and demographic factors which must be taken into consideration in formulating a precise definition of policy.

There was no significant change in policy during 1951, but progress was made towards the achievement of more precise definition.

In October the following statement of policy, or objectives, in regard to the development of the Tea Industry was approved by the Governor on the advice of the Executive Council:—

> " To develop as fully as possible on an economic and efficient basis the production of tea in Mauritius as a valuable secondary industry ; to increase the local demand for such tea and to promote its export."

This statement was referred to the Tea Committee for advice on the steps which should be taken to carry it out. At the end of the year the Committee was still engaged in drawing up a comprehensive programme, but certain measures had already been agreed and incorporated in a draft amendment to the Tea Ordinance.

The White Paper published in 1949 defined policy in regard to Crown Forest Lands but did not deal with other Crown Lands and Pas Géometriques. A Committee was therefore set up to advise on the utilization of these lands and it was still at work at the end of the year.

The Naural Resources Board, in addition to dealing with a good many more or less routine matters, formulated proposals for the formation of a Board of Agriculture, Natural Resources and Fisheries. The proposals for the creation of such a board originated with His Excellency the Governor and was unanimously approved by the Board which worked out the details necessary for the preparation of legislation.

There was in the past an active Board of Agriculture, and it still exists on the statute books, but it became moribund apparently because its functions were taken over one after the other by separate boards and committees. There are now about 45 separate boards, committees and other organisations, official and unofficial, concerned directly or indirectly with agricultural matters, and the need for some measure of correlation is clear.

It is proposed that the Board of Agriculture, Natural Resources and Fisheries should incorporate a considerable number of the official boards and committees, including the Natural Resources Board itself, and co-ordinate the

work of others. In addition, it would act, under the Chairmanship of the Liaison Officer for Agriculture, as a central body for formulating general policy.

Progress was also made in carrying out the policy for development of the fibre industry. Work on the enlargement of the Sack Factory, to an extent which will double its productive capacity, was started and legislation was drafted to give effect to proposals for financial assistance to hemp producers.

As regards the implementation of food production policy, the main event of the year was the start of an extension service for small cow-keepers. This innovation, designed to increase the quality and quantity of the milk supply, achieved immediate and almost overwhelming popularity.

Staff of the Department of Agriculture

The senior posts in the Department are as follows—:

Director.

Deputy Director.

Deputy Director in charge of the Agricultural Division.

Chemist, Sugarcane Research Station*.

Botanist, Sugarcane Research Station*.

Plant Breeder, Sugarcane Research Station.

Senior Agricultural Officer (2 posts)*.

Senior Veterinary Officer.

Animal Husbandry Officer.

Veterinary Officer*.

Plant Pathologist.

Sugar Technologist.

Registrar, Central Board.

Accountant, Central Board.

Chief Chemist and Assistant Registrar, Central Board.

Entomologist.

Associate Entomologist.

Chemist, Agricultural Chemistry Division.

Fisheries Officer.

Tea Officer†.

Land Settlement Officer†.

---

*Vacant ;

† Included in Development & Welfare Estimates

There are 21 Officers who are Assistant Heads of Divisions or of similar grade (including 4 Agricultural Officers), 46 Officers of the grade of Scientific Assistant or its equivalent (including Agricultural Instructors), 18 Overseers or officers of similar grade, 17 members of the Clerical Staff and 21 Laboratory Attendants and Messengers.

In the Fisheries Branch there are 7 Inspectors of three grades and 52 guards of three grades. The staff of the College of Agriculture consists of a Principal and Lecturer in Biology and Agriculture (vacant), three Lecturers and three Assistant Lecturers.

Staff Movements

The Director of Agriculture returned to the Colony from overseas leave on 9th April, 1951, and consequent on his return Messrs. N. Craig and R. Avice reverted to the duties of their substantive posts as Deputy Director and Registrar, Central Board respectively.

The Deputy Director in charge of the Agricultural Division, Mr. A. North Coombes, left the Colony on overseas leave on the 15th June, 1951. During his absence, Mr. E. Lesur, Agricultural Officer, was placed in charge of the Agricultural Division.

The Chemist of the Division of Agricultural Chemistry, Mr. R. Lincoln, returned to the Colony on the 9th December, 1951, from foreign leave. The Tea Officer, Mr. F. O. Sprinks, returned from leave on 14th May, 1951.

The Accountant, Central Board, Mr. J. H. W. Neal, went on overseas leave on the 11th October, 1951.

The Sugar Industry

Once again a record sugar crop was reaped—the fifth record crop in succession ; and, once again, this was achieved in spite of weather conditions which, apart from the absence of destructive cyclones, were by no means ideal.

From December 1950 until May 1951, the period of cane growth, weather conditions were very favourable indeed and consequently a great weight of cane was produced. The average yield of cane, for the whole Island, reached the high figure of 27·6 metric tons per arpent. (One arpent – 1·04 acre).

Unfortunately, the promise of the earlier part of the season, which gave grounds for the belief that the target of half a million tons of sugar might be reached, was not fulfilled. June, July and August, the critical time of cane maturation, was a period of troubled climatic conditions ; there was over-much rain, temperatures were above average and the *richesse,* or sugar content, of the cane suffered. The final extraction of sugar averaged only 11·11 per cent as compared with 12·27 per cent for the 1950 crop.

The increase in the total output of sugar must be attributed largely to the favourable growing season, the high yield of cane resulting from these conditions, and an increase of nearly 6,700 acres in the area harvested.

The labour force proved inadequate to the task of harvesting almost four and a half million tons of cane, and the crop, which started late in June, was not completed until mid January.

The total amount of sugar produced was 483,904 metric tons—27,178 metric tons more than the previous record crop in 1950.

This growing volume of sugar production and the achievement of record outputs is not a phenomenon peculiar to Mauritius. In the year 1950–51 the world sugar crop was the largest on record ; 34 million metric tons ,as compared with 30·4 in the previous year and a prewar average of 26·1* Increased output was, however, matched by higher demand and, though there was some scare buying and stock-piling, the bulk of the increase moved into consumption. World prices were not only maintained but actually advanced to reach their highest level in almost thirty years.

The explanation is to be found in high levels of economic activity throughout the world and advancing standards of living which have brought millions of new consumers into the market for sugar and increased the consumption of millions more. The increase, as compared with the prewar average, in the *per capita* consumption of sugar in countries of relatively low living standards is striking. We ourselves are an example. Before the war each person in Mauritius consumed, on an average 24·3 kilos of sugar (raw value) in a year ; the present figure is 40·9 kilos.

It is, however, quite impossible to foresee whether there will be further expansion of world economic activity or a recession: both seem equally possible. The Commonwealth Sugar Agreement, signed in London in December 1951, offers a welcome measure of insurance against the latter possibility and the prospect of a recurrence of conditions such as obtained in the 1930's when sugar prices collapsed to sub-economic levels.

Commonwealth sugar producers have agreed to limit their individual exports in any one calendar year to definite figures—470,000 tons in the case of Mauritius—but this article of the Agreement does not come into force unless and until a new International Sugar Agreement is entered into and the quotas are subject to upward revision in 1953 and subsequently in the light of consumption levels and other factors.

The United Kingdom Government has undertaken to buy during each calendar year agreed quantities, or " negotiated price quotas," from each of the exporting territories at prices to be negotiated annually on the basis that such prices shall be reasonably remunerative to the efficient producer. The basic negotiated price quota for Mauritius is 335,000 tons but, following an agreement by the new Zealand Government to purchase sugar from the United Kingdom Government until 31st December, 1958, this figure was increased to 351,000 tons for the period during which New Zealand participates in the Agreement. Basic negotiated price quotas may also be revised upwards in 1953 and at any subsequent time if an examination of the position shows this

*State of Food and Agriculture : Review and Outlook, 1951. F.A.O., Rome, 1951.

to be warranted—in particular, if the unrestricted domestic consumption of the United Kingdom is shown to exceed 2,550,000 tons. The Commonwealth Agreement remains in force until 31st December, 1959, but it may in 1953 or subsequently be extended by agreement for a further year.

The quota arrangement does not come into effect until 1953. In 1952 all sugar exported from Mauritius will again be bought by the United Kingdom Government. The agreed price for 1952 is £38.10.0 per long ton (96° polarisation)—an increase of £5.12.6 on the 1951 price.

Alcohol production increased greatly. The output of the distilleries was over 10½ million litres of which more than 6½ million litres were exported.

The export of molasses in bulk has now become a certainty. The Mauritius Molasses Company, which was formed during the year, has constructed two storage tanks each of 8,000 tons capacity at the docks and has equipped itself with a fleet of tanker lorries. No molasses had actually been exported by the end of the year, but 25,000 tons had been purchased for export.

The Sugar Technology Division of the Department of Agriculture continued the manufacture of yeast and produced nearly eight million tablets, mainly for use by the Medical and Health Department. New machinery was ordered to enable production to be increased.

The Divisions of the Department which serve the Sugar Industry are the Sugarcane Research Station ,the Sugar Technology Division, the Central Board and the College of Agriculture.

Except for the breeding programme, the work of the Research Station continued to be greatly hampered by lack of staff. Breeding work, which was much assisted by very profuse arrowing in 1951, is now dominated by the need for early maturing canes and varieties suited to the cool high-rainfall zone of the Island. The new variety E.1/37 bred by Highlands Sugar Estate, which has been under test at the Station for some years, was released for commercial growing and recommended for the wetter regions. This product of private enterprise promises to be a valuable addition to our cane stocks.

Both the Botanical and Chemical sections of the Station remained without senior technical staff. The programme of work was therefore restricted and consisted mainly of further investigations in weed control, continuation of the experiments with inter-planted food crops, factorial fertilizer experiments and studies of the fertilizer effects of crushed basalt.

The Extension Service of the Sugarcane Research Station, which exists for the purpose of improving the cultivation standards of small planters, had a successful year. No less than 177 meetings of small planters were held at which lectures and demonstrations were given. A large number of demonstration plots were maintained for visual demonstration of improved practices and varietal differences, 36 special demonstrations of weed control were organised, and planting material of the new canes M.423/41 and E.1/37 was distributed to small planters.

In addition to advisory and routine analytical work for factories and distilleries, the Sugar Technology Division conducted special studies of clarification of juice, boiling and centrifugalling of sugar and the quantities of wax and fats recoverable from scums. This Division is also responsible for chemical control of alcohol and molasses for export.

The Central Board, which regulates relations between sugar planters and millers, continued its operations throughout the year on the same basis as formerly. Twenty one meetings were held in 1951 for the purposes of assessing planters' sugar, hearing appeals against these assessments, arbitrating in disputes between planters and millers, and considering applications for changes in factory areas.

The *ad hoc* Committee set up to advise in regard to the constitution of the Central Board and the method of allocation of sugar between millers and planters produced its report in April 1951 (Sessional Paper No. 7 of 1951). The Committee proposes that the constitution of the Board should be altered and that it should consist of a high-ranking financial officer as Chairman, a legal man of at least ten years standing and a Sugar Technologist.

The recommendation concerning the method of sugar allocation is that the present ratio of two-thirds to the planter and one-third to the miller should be retained as a basis of calculation, but certain new adjustments as regards bagging costs, factory residues and variations in transport costs between factory and dock are proposed.

Fibre

The Fibre Industry also had a successful year. Total production of fibre—exclusive of tow and cuttings—was 1,880 tons, of which 1,248 tons were supplied to the Government Sack Factory and 412 tons exported.

The scheme for enlarging the Sack Factory, to an extent designed to increase its production by 1½ million bags a year, was put into effect. Plans were prepared, all the necessary machinery was ordered and, as an essential preliminary step to the extension of the building, the fibre store was pulled down and rebuilt on a new site. Some of the machinery had also to be moved. As a result, the factory had to close down for two months.

During ten months of the year work was carried on to full capacity and, in spite of the interruption, 1,084,708 bags were produced—only slightly less than last year's record output.

It is expected that the new machinery will be delivered in the latter part of 1952 and it is hoped that the enlarged factory, with its production capacity of over 2½ million bags a year, will be in operation by the middle of 1953.

By then some of the plantations which have been made in the last three or four years will be coming into production but it is doubtful if the total output of fibre will be sufficient for the greatly increased needs of the factory. In order to encourage the extension of plantations, proposals for providing loans to fibre producers were formulated and incorporated in a draft bill for the consideration of the legislature.

The Committee appointed to make recommendations on the future of the Sack Factory submitted its report in April 1951. Legislation based on the recommendations of the Committee was prepared and had passed its third reading by the end of the year. As a result of this new legislation (Ordinance 88 of 1951) the factory will in future be operated as an independent unit under a Board of Directors representative of the fibre industry, the sugar industry and the workers, with a Government official as Chairman.

The " Tripartite Agreement " on the price of fibre and the marketing of bags will also come into effect under the new arrangements.

Departmental work on the fibre plant of Mauritius (aloe or Mauritius hemp, *Furcraea gigantea)* is now concentrated at the Fibre Experiment Station at Richelieu which was started in 1950. In 1951, eight new trials were laid down, increasing the area under experimental plantations to 14 acres. The new experiments include fertilizer and additional spacing trials, investigations into the possibility of interplanting food and other crops with aloes, and costing trials designed to provide data on costs of production under different systems of plantation management.

The trials and the collection of fibre-yielding plants are now well established and making good growth, but the aloes suffered to some extent from a leaf spot disease which in some cases attacks the heart of the plant and causes its death. This disease, which was first noticed in plantations a few years ago, has given rise to some anxiety.

A very interesting indication of its cause emerged from the fertilizer experiments at the Station. The disease hardly occured at all on plots which had received potash fertilizer, but its incidence was high on plots from which this fertilizer had been withheld.

The Collection of introduced fibre plants was increased by the addition of *Hibiscus cannabinus,* seed of which was obtained from Nigeria, and preliminary planting trials were established. Seed of New Zealand hemp, a plant which may prove suited to the wet upland districts, was also obtained, and a quantity of the scutched fibre was ordered from New Zealand for processing trials at the Sack Factory.

Investigations into the problems of decorticating the *Furcraea* leaf were continued by the Sugar Technologist and his assistants. They included studies of the distribution of fibre in the leaf, determination of industrial loss, the breaking stress of fibres decorticated by different machines and the effects of retting.

The Robey decorticator was re-assembled on a site near the Fibre Experiment Station and provided with a 35 h.p. electric motor. This machine is now being used experimentally to see if it can be modified in such a way as to reduce industrial loss.

Tea

The total area under tea, all of it, of course, in the high-rainfall zone above 1,000 feet in altitude, is now about 2,160 arpents. Permits for a further 954 arpents have been issued and a good deal of this is likely to be planted when seed becomes available.

Approximately 1,900 arpents were in bearing in 1951 and this produced 841,160 lb. (English) of made tea—a yield of 443 lb. per arpent. Production of black tea has almost doubled over the last five years and the output for 1951 is, in its own small way, a record. The increase of about 82,000 lb. over the production for last year was due to favourable weather conditions, continuing improvement in cultural methods and a small increase in acreage.

Labour was again short during the crop months and the practice of collecting workers from outside areas and transporting them by lorries every-day is on the increase.

Lack of seed continued to limit planting. It proved impossible to obtain supplies from countries free from blister blight, but negotiations with Nyasaland which were in progress at the end of the year promised to have successful results. As regards local supplies, the old seed-bearers at Montille, cleared by the Department three years ago, are now yielding well and the plantations made with Manipuri seed from Malaya should start to yield next year—though the initial seed crop will be small.

Exports of Mauritius tea amounted to 129,270 lb. (compared with 47,086 in 1950 and 33,917 in 1940) and the quantity of tea imported was 47,640 lb. (compared with 86,849 in 1950). Most of the exported tea went to the United Kingdom and France but small quantities were sent to Hong Kong, Seychelles, Madagascar, Réunion and other countries.

Of our five factories only one produces in quantity tea of a quality suitable for export and the price obtained on the export market is less than the tea would fetch if sold locally. In order to encourage export, the Executive Tea Committee prepared a scheme for the formation of a fund to be used for adjusting the return from exported tea to closer parity with local market prices, the fund to be financed by a cess of 10 cents on each pound of tea manufactured in the Colony. This scheme, intended as a stop-gap measure until more general agreement on marketing can be reached, was embodied in legislation which had not reached the Legislative Council by the end of the year.

In 1949 the owners of the four unsatisfactory factories were required to reconstruct and re-equip them in accordance with approved plans, or to forfeit their permits to operate factories. Progress has been disappointing. Only one of these factories has been reconstructed satisfactorily and it will probably come into operation early next year. The Tea Committee decided to grant an extension of time to two of the others and to withdraw the permit of the third but the last decision was overruled as the result of an appeal to the Governor in Executive Council.

Extension and reconstruction of the largest factory, Bois Chéri, which is being carried out voluntarily by the owner, made good progress. When the work now in progress is completed this factory will be able to produce over a million pounds of manufactured tea a year and the Colony's manufacturing potential will be considerably in excess of the supply of leaf.

Direct planting of tea by Government is still under discussion but approval was given for the initial planting of 100 acres. Towards the end of the year land clearing, in preparation for this planting, was started in the Midlands area.

The Executive Tea Committee held 9 meetings during the year and dealt with a large number of matters including reconstruction of factories, amendment of legislation, implementation of general policy for development of the industry, marketing of tea, proposals for an experimental factory, issue of planting permits, imports of seed and customs duties on tea packing materials.

Departmental work is under the control of the Tea Officer who is also Secretary of the Executive Committee. This work included advice to planters and manufacturers, routine inspection of land on which it is proposed to plant tea, production and sale of seed, experiment and demonstration and preparations for large scale planting.

The area of tea on the Experiment Station at Wooton was extended to 30 acres most of which is making very good growth. Here experiments and demonstrations of plantation management are in progress, including fertilizer practice and the use of wind breaks and inter-planted legumes. Very encouraging results have been obtained from a treatment, which involves pegging down the stem and branches of the young plant, designed to bring the tea into early bearing. Some of the tea treated in this way should come into bearing at two and a half years from planting. Useful results have also emerged from the work on vegetative propagation.

Tobacco

The main event of the year was the opening of the new cigarette factory of the British American Tobacco Company (Mauritius) Ltd. at Port Louis. This imposing modern building employs a staff of 275 workers and has a manufacturing potential of 50 million cigarettes a month. Special attention has been given to the care and welfare of the workers and the amenities provided are of a standard which might well serve as an example not only to Mauritius but to many an older and more industrialised country.

The area planted to tobacco, under permits issued by the Tobacco Board, was 719 arpents, and a very satisfactory crop amounting to 485,688 kilos (over a million pounds) of cured leaf was reaped. Total deliveries for local consumption were about 412,000 kilos, so that there was a slight but badly-needed improvement in the stock position. All sales of tobacco were made to the British American Company, now the only manufacturers, with the exception of 5,500 kilos of air cured Amarello exported to Europe in terms of the contract signed in 1950.

No satisfactory and permanent export outlet has yet been found. London buyers, as was to be expected, have shown interest only in the better grades of the "New Varieties" (Bonanza, Jamaica Wrapper etc.); other types might find markets on the Continent, but only at competitive prices. Local prices for tobacco are determined not only by relatively high costs of production but by sugar prices. Both crops are grown on the same land and unless the return from tobacco is higher than that from cane the latter will be grown in preference. Further explorations of possible export markets are being made, but it cannot be said that prospects are very hopeful.

But for the restricted capacity of the present warehouse, a greater quantity of tobacco would have been allocated to growers in order to allow of more rapid restoration of the stock position. As it was, the warehouse had to work overtime to deal with the crop.

Serious considerations was given to the question of building a new warehouse, not only because of the limitations of the present building but also because it was intimated to the Board that the premises they have occupied for so long might in future be required for other purposes. A building site at Plaine Lauzun has been provisionally reserved and plans and estimates for the new building were obtained.

Work at the Tobacco Experimental Station was limited because of the reduction of supplies of irrigation water from La Ferme Reservoir, on which the station largely depends. It was confined mainly to production of seed and seedlings for growers, in which the station performs a very useful function, and variety trials, including a number of recently imported types.

The situation of the Tobacco Station, which is at Richelieu, is no longer representative of the main tobacco producing areas, because these have changed since it was established. It was therefore decided that substations should be opened up in more typical regions and work on the first of these, at Rivière du Rempart, was started.

Food Crops

Apart from market garden production of vegetables, the main food crops grown on the Island are maize, groundnuts, potatoes, cassava or manioc, arouilles or taro, sweet potatoes and rice.

The estimated total areas planted to these crops and the total production for the last three seasons are as follows*:—

Year	*Area (arpents)*	*Total Production (M. tons)*
1948–49 ...	17,325 ...	19,673
1949–50 ...	13,180 ...	15,558
1950–51 ...	8,852 ...	14,469

The continuing fall in food crop production, notwithstanding the efforts of the Food Production Board, is due mainly to rising prices for sugar and fibre resulting in the encroachment of these crops on the food-producing lands. Another factor, probably, is the assistance which the factory estates provide

* Report of the Food Production Board for the year 1950–51.

for planters who grow canes, in the form of financial advances and the use of machinery—but the basic reason for the drop in production is the simple one that, since the subsidies were discontinued, returns from sugar and fibre are greater than returns from most of the food crops. Fortunately, this does not apply in the case of intensive market gardening, which yields high returns, and there is as yet no real evidence that production of vegetables is declining.

In its efforts to counter falling output the Food Production Board is following two main lines: instruction in better methods so as to improve yields and increase returns, and operation of a mechanical land clearing and cultivation unit for the benefit of food producers.

A large number of small experimental and demonstration plots have been established all over the Island, mainly for showing the effects of proper fertilizer application on various crops. Numerous demonstrations of methods of pest and disease control were given and spraying equipment was loaned to planters for short periods. In addition, discussion meetings with groups of planters were frequently held by officers of the Board.

This work is undoubtedly having some effect, though there is still much scope for improvement. It will be noted that although the reduction in acreage was 33 per cent, as compared with the previous season, the reduction in gross production of food crops was only 7 per cent. This was due partly to a favourable season, but also to improvement in cultural practice, more adequate fertilizer application and greater attention to control of pests and diseases.

The mechanical unit—consisting of heavy, medium and light tractors with equipment for bulldozing, stumping, subsoiling, rooting, ploughing and cultivating—began work on private lands in April, 1951. Services are provided for food producers at a charge which adequately covers operational and overhead costs ; they were immediately popular and the unit was more than fully occupied for the remainder of the year, with the exception of the lightest equipment (15 h.p. tractor class) which is under-powered and has too fragile implements to cope with the type of work which is mostly in demand.

The heavy machines also carried out a number of tasks for Government, including preparation of land for the land settlement scheme and for fodder and tea planting.

The Agricultural Division of the Department, which is concerned with crops other than tea and sugarcane, continued to be severely handicapped by lack of staff, and progress in carrying out the plans for its expansion was therefore disappointing. Much preparatory work, was however, carried out: the old experimental stations were extended and improved, and land was prepared for an additional station at Richelieu.

Propagation of plants and production of vegetable seeds for sale to the public and distribution to Government Departments was continued by the Division. Nearly 37,000 plants and over 1,500 kilos of vegetable seed were sold or distributed. Although prices have not been increased, the revenue derived from these sales, including the value of material supplied to Government Institutions, reached the record figure of Rs. 17,039.

The Sugar Technology Division of the Department undertook the purchase and processing of groundnuts at the Government Maize Mill. In all 269 tons of nuts were received at the Mill. About 166 tons were kept for seed and the remainder was decorticated, dried and sent to the Innova Oil Mill for crushing.

Livestock

There are in Mauritius well over 40,000 cattle and about 60,000 head of small stock, mostly goats but including some sheep and pigs. Most of the cattle—over 32,000—are of the local *Creole* milk breed.

The *Creole* is a small-framed dairy animal undoubtedly introduced from Europe in the forgotten past and long since acclimatised and adapted. Its potential merits as a milk producer are now beginning to be recognised.

The breed has had small chance of displaying its capabilities. There has been little or no selection since it was introduced—perhaps as much as two centuries ago. Nearly all the cows are owned by Indian peasants and are stall-fed throughout the year, mainly on a very incomplete diet of collected grass, leaves and cane tops in the season. They leave the hut in which they are kept only to go to the bull—but since artificial insemination started some of them do not even have this excuse for a promenade.

One of the chief objectives of animal husbandry and veterinary work is improvement of the milk supply, and, though there are a few estate dairies, this depends to a very large extent upon the *Creole* cow and the Indian cow-keeper.

The most notable event of the year in this connection was the launching of the Animal Husbandry Extension Service, designed to bring advice, assistance and at last elementary veterinary services directly to the cow-keepers. The new field staff recruited during the year, consisting of an Assistant Animal Husbandry Officer, 3 Livestock Officers and 6 Propaganda Assistants, started field work in September.

The response from the cow-keepers was enthusiastic and almost immediate. For this there were, probably, two main reasons: the success of the field staff in establishing friendly relations with and enlisting the confidence of the cow-keepers, and the spectacular results achieved by treating animals suffering from calcium deficiency and by enucleating ovarian cysts for the cure of sterility. The field workers also provided an artificial insemination service of which much use was made.

The extension service was started in one relatively small area and the most striking tribute to its success is the number of petitions which have been received from cow-keepers in other areas asking that the service should be extended to them. The work is being extended to new areas as rapidly as resources permit.

This initial success owes much to the general investigational work on animal diseases conducted by the Senior Veterinary Officer. The importance of ovarian cysts as a cause of infertility was first demonstrated at the Government Dairy. The condition has now been shown to be common among the stall-fed cows of the Indian peasants and its cause appears to be associated with lack of exercise rather than with diet. The normal sexual cycle of the cow can be re-established by mere enucleation of the cysts.

Other common causes of loss to the cow-keeper are paralysis due to a low level of calcium in the blood of the cow, and soft bone resulting from mineral deficiency in the absence of adequate vitamin D. The first of these conditions responds to injections of calcium gluconate, sometimes in a most spectacular manner, and the second can be cured by Vitamin D therapy and bone meal in the diet.

Other veterinary work of note included further progress in the campaign against bovine tuberculosis and in control of contagious abortion at the Government Dairy.

About 700 herd cattle and 150 milk cows were tuberculin tested during the year. The incidence of the disease is higher among the herd cattle: 69 of the herd cattle reacted positively and only 8 milk cows. All reactors were destroyed. One large herd which was highly infected some years ago has been completely cleared of tuberculosis by repeated tuberculin testing and removal of reactors.

The incidence of abortion at the Government Dairy fell from 23·5 per cent of all calvings in 1950 to 4·3 per cent (in fact, only two cases) in 1951. This is probably the happy result of carrying out agglutination tests every month, segragating the positive reactors, and inoculating all heifers with the vaccine S. 19. No cases of the contagious abortion were observed among other dairy cattle or at the Government Stock Breeding Centre at Palmar—and it is hoped that persistence in the present policy will soon result in its elimination from the Dairy.

Control of disease and improvement of stock by grading are important aspects of the milk production problem. Equally, or perhaps even more, important is feeding, but progress in this direction is inevitably slower, not only because many of the cow-keepers have yet to be persuaded that better feeding can be made to pay but because of the extreme shortage of feeding stuffs.

Preparation of animal feeding mixtures at the Government Maize Mill, now under the control of the Sugar Technology Division of the Department, was started in 1950 and developed in 1951. The quantity produced in 1951 was 455 tons, prepared mainly from available supplies of maize grain, lentils and coconut and groundnut cake with some addition of molascuit. Enquiries are being made regarding possible sources of supply from abroad, without which production cannot be rapidly increased.

Plans for the supply of feedstuffs include also a hay-production scheme, starting with a pilot project. Fifty-one acres of land have been cleared for the pilot project but preparation and sowing of the land could not be completed in 1951 owing to shortage of staff and machinery.

The effects of feed and environment on the milk yield of the *Creole* cow is being investigated at Réduit under controlled conditions. A small herd of six typical cows was kept under conditions approximating as closely as possible to those of the Indian cow-keeper's animal and fed on the same diet. The average lactation period was 192 days and the average daily yield of milk was 3·14 litres per cow. The herd has now been transferred to a light, airy byre where they receive adequate care and a well-balanced diet. So far only one cow has calved since the transfer, but by the 14th day she was giving a yield of 11·9 litres of milk a day.

In August heat tolerance tests were started at Palmar Breeding Centre in order to find the effect of coastal climatic conditions on milk cattle of the Friesan and Creole breeds and their crosses, as a guide to the type of animal best suited to these conditions. The tests were still in progress at the end of the year and will be continued throughout the warmer months.

The animals now kept at the Breeding Centre include *Creole* herd cattle, Africanders, Ongoles, Friesian and Friesian-Creole grade dairy heifers, Persian and Dorsian sheep, Anglo-Nubian milk goats and a recent addition, a herd of selected Rodriguan goats for trial crossing with the Anglo-Nubians.

The Dorsian breed of sheep, introduced from South Africa, has been under study only for a short time but the indications are that it is well adapted to local conditions and the lambs are much earlier maturing than those of the Black Head Persian. They weigh, on the average, 60 lb at five months off pasture, with no supplementary feed. The chief deterrent to sheep breeding, apart from internal parasites which can be controlled successfully by monthly dosing, is the sheep nostril fly. Experiments to find more effective means of controlling the nostril fly are being carried out, with results which appear to be promising.

The Government Dairy increased its total production of milk to 132,822 kilos of milk in 1951 (compared with 100,631 in 1950 and 95,273 in 1949) and there was a substantial improvement in the average daily yield per cow. Calvings were numerous and there were only two abortions. The practice of rearing the young dairy heifers in the open at Palmar and returning them to the dairy in the fourth or fifth month of pregnancy was continued with very satisfactory results. So far all have calved normally and are giving good milk yields.

The increased milk output and a reduction in the amount of milk fed to calves enabled two more Child Welfare Centres to be added to the list of institutions supplied by the Dairy.

Land Settlement

After some years of investigation, discussion and planning, the pilot Land Settlement Scheme received final approval in August 1950, and negotiations for the purchase of suitable land were started shortly afterwards.

On the return of the Land Settlement Officer from overseas leave in April 1951, he was attached to the Agricultural Department, and assistant staff necessary for the work of settlement was recruited. By then three areas had become available: the greater part of the 300 acres which it is proposed to purchase in the Terre Rouge region, 258 acres of purchased land at Petit Sable and 50 acres of Crown Land at Richelieu.

The first settlements were made at Petit Sable where, after preliminary land clearing and preparation, 10 residential smallholdings, 3 bare-land holdings, 40 allotments and 85 plots for cultivation of seed onions (a speciality of the region) were demarcated and allocated. Selection of tenants from among the numerous applicants for land was done by a Special Committee set up for the purpose.

The main part of the scheme is to be at Terre Rouge. This area is among the driest in the Colony and it is intended to supply irrigation water to the settlements. Preliminary survey work is in progress, but it is unlikely that the water will be available in less than a year. Meanwhile, the land is being cleared of scrub and rock by the mechanical unit of the Food Production Board and the cleared land is offered to small planters on short-term lease for cultivation of food crops during the summer rains.

At Richelieu too, the land has been leased to planters for four months for groundnut growing. When the crop has been reaped permanent smallholdings will be established there.

Plant Pests and Diseases

None of the diseases of sugarcane caused very widespread or serious damage during the year, a comparative immunity which may be attributed largely to favourable weather conditions and the absence of cyclones.

The major insect pests, the three moth borers and the white grub, continued to take their customary toll. Since the replacement of practically all other varieties by the cane M.134/32, which possesses remarkable ability to overcome root injury caused by white grub, the moth borers must be regarded as the most destructive insect pests of the sugarcane in Mauritius. A survey of the incidence of borers, which was made during the 1951 crop season, revealed some severe outbreaks in certain localities. Work on the problem of control of these pests included completion of a study of the parasites of the three moth borer species, a survey of cane borers and their parasites in the neighbouring island of Réunion—facilities for which were most willingly provided by the French Authorities—and further introductions of parasites of *Diatraea* spp. from the Trinidad Sub-Station of the Commonwealth Institute of Biological Control.

Experiments with Benzene hexachloride as a soil insecticide for control of the white grub have been in progress since 1947. From the results of the trials it has now been coucluded that this not a practicable method of control, though application of the chemical does reduce infestation, and it is proposed

to discontinue the trials. Further consignments of the toad *Bufo marinus* were reveived from the Trinidad Sub-Station of the Commonwealth Institute of Biological Control, but there is as yet no indication that this introduction is likely to prove more successful than the last.

The Botanical Division of the Department—which is really concerned with the study and control of plant diseases and prevention of their introduction—carried out investigations on the nature of " leaf burn " of sugarcane, the internal stem necrosis which has been observed on some cane varieties, control of pineapple disease of cane, diseases of vegetables—including a serious outbreak of potato leaf curl on crops grown from seed of South African origin—and the incidence and cause of the recently noted leaf disease of *Furcraea*.

The work on the last disease, of which mention has already been made, deserves a further note. No causitive organism could be isolated from " aloe " leaves showing the typical symptoms, nor could these spmptoms be induced by maintaining the plants under conditions of high humidity though there was reason to think that excessive moisture might be a predisposing cause. The distribution of the disease on the fertilizer trial plots at the Fibre Experiment Station was then noted and a count of diseased and healthy plants on all of these plots was made. From these counts the following very striking figures were obtained:—

Fertilizer	*N*	*CaO*	*None*	P_2O_5	*NPK*	*NPK+Cao*	*K*
Percentage of diseased plants ...	62·3	34·5	32·1	31·5	13·1	12·1	0·6

Nitrogen, apparently, increases the susceptibility of the plant, although it induces rapid and vigorous growth, while potash confers resistance. Field observations on young commercial plantations of *Furcraea* supported the conclusion that the disease is associated with soil conditions. The indications are, therefore, that the disease, whatever its actual cause may be, can be controlled by properly balanced fertilizer application.

Work on biological control of the weed bush *Cordia macrostachya* has been practically completed. The seed-destroying insect *Eurytoma* was dispersed throughout the island and established itself so rapidly in the new centres that by the end of the year it could be found among *Cordia* bushes almost wherever they occur. The relation between the leaf-eating beetle *Schematiza* and the *Cordia* plant appears now to be in a fluctuating phase. After the initial phase of spectacular destruction, and no doubt as a result of this destruction of its food supply, the beetle population declined. Defoliation and destruction of the remaining *Cordia* continued on a reduced scale, and in some places there was a certain amount of regrowth of the weed.

In one area from which *Cordia* had been almost entirely eliminated it was rapidly replaced by another weed bush, *Lantana camara*. It is, however, thought that such replacement is likely to be limited to a relatively small ecological zone ; the wetter of the lowland areas. Enquiries as to the status of *Lantana* as an agricultural pest were, however, conducted and a complete survey of the insect fauna associated with the plant was made as a preliminary to a biological control campaign should this prove necessary.

The pigeon pea, which might be a useful food plant for the Island, is little cultivated because satisfactory seed yields are rarely obtained. This has been attributed largely to certain flower-and-pod-destroying insect pests, and tests of D.D.T. sprays as a means of control have therefore been made. The results indicate that the problems associated with cultivation of this plant are complex and cannot be solved solely by insect pest control.

The Island of Rodrigues

The inhabitants of the dependency of Rodrigues, a remote island about 40 sq. miles in area, live mainly by subsistence or semi-subsistence agriculture and the keeping of cattle, small stock and poultry for export to Mauritius. Increase of population—for which there is no outlet except army service which has drained the island of most of its able-bodied young men—cultivation of the very steep slopes comprising most of the surface, over-stocking and deforestation have resulted in conditions and problems similar to those of a greatly over-populated African Native Reserve.

Partial failures of the main foodcrop, maize, are common, partly because of deteriorating conditions and partly because of unreliable rainfall. There was a partial failure in 1951. Early maize had a good start and yielded well, but later plantings suffered from drought in March, April and May, and hot winds during March. It is estimated that these adverse conditions reduced the maize crop by 40 per cent. Beans, a secondary but important crop, also suffered as a result of the drought.

Cattle, and small stock (goats, sheep and pigs) increased in numbers and remained in fair condition, but fowls were less plentiful because of the shortage of maize.

Work on soil conservation, by the construction of stone terrace walls on the steeper slopes, was continued. During the year a total of 252,300 feet of wall was constructed for the protection of 244 acres at an average cost of Rs. 284 per acre.

Unfortunately, but unavoidably, much of the Agricultural Officer's time continued to be occupied by questions of land tenure and allocation of Crown Land for cultivation.

Experimental work and the production of planting material of coconut, citrus and ther fruit trees for sale to planters was continued at the Oyster Bay station, which also serves as a stock-improvement centre for the island.

It is significant of the season that no planters made use of the grain storage facilities which are now available at the Station—there was no surplus to store.

Other departmental work, which was necessarily limited by shortage of staff and the multiplicity of miscellaneous duties which devolve upon the Agricultural Officer, included an investigation into possible local sources of phosphatic guano, supervision of school gardens and training of agricultural apprentices.

11th July, 1952.

W. ALLAN,
Director of Agriculture.

Order of Appendices

Agricultural Statistics
Sugarcane Research Station
Central Board
Agricultural Division
Agricultural Division (Rodrigues)
Veterinary Division
Animal Husbandry Division
Tea Division
Tobacco Research Station
Entomological Division
Plant Pathology Division
Chemical Division
Sugar Technology Division
Land Settlement Division
Legislation.

Agricultural Statistics

1. Weather

Data for rainfall recorded at three Stations and deviations from average temperatures at one of them are given in the Table below. The three Stations are representative of the main climatic zones of the Island ; Pamplemousses is in the sub-humid area, Curepipe in the super-humid zone and Réduit is intermediate.

RAINFALL (in inches)

Month	*Pamplemousses Expt. Station*		*Central Experiment Station*		*Royal College (Curepipe)*		*Temperature at Réduit*
	*Av.**	*Reg.†*	*Av.**	*Reg.†*	*Av.**	*Reg.†*	°C ‡
Jan.	9·56	4·86	10·32	12·94	16·33	20 45	+0·1
Feb.	8·74	3·52	10·95	5·08	17·28	17·86	−0·8
Mch.	9·32	9·08	11·94	12·12	19·31	12·69	−0·7
April.	5·96	3·67	5·41	6·58	12·37	7·73	−0·6
May	4·48	7·35	4·24	3·60	9·86	8·29	+0·1
June	3·43	2·15	3·11	4·50	7·47	13·26	+0·1
July	2·93	1·85	2·75	2·89	8·57	6·37	+0·7
Aug.	2·59	1·85	2·47	3·08	7·79	11·66	+0·2
Sept.	1·83	2·69	1·71	1·37	5·78	7·41	+0·2
Oct.	1·95	2·24	1·91	4·70	4·52	5·11	+0·4
Noc.	2·13	2·15	2·33	3·50	5·71	5·61	−0·2
Dec.	4·91	0·87	6·37	0.85	9·71	—	+0·1

*Read Average for Av.; †Read Registered for Reg.; ‡Departure from Average.

A general note on weather is given in the section of the report dealing with the Sugar Industry.

2. The Sugar Crop

	1950	*1951*
Amount of cane crushed (in Metric Tons)	3,719,674	4,355,102
Average sugar extraction per cent cane	12·27	11·11
Totol amount of sugar produced (in m. tons) ...	456,726	483,904
Area of cane harvested (in arpents)	151,028	157,714

NOTE : 1 arpent = 1·04 acres.

All sugar available for export was bought by the Ministry of Food of the United Kingdom Government. The total quantity exported in the calendar year 1951 was 505,623 metric tons ; local consumption amounted to 20,401 tons, of which 12,091 tons was white sugar and 8,310 tons was raw sugar.

3. Imports of Agricultural Machinery and Fertilizers

The quantity and value of agricultural machinery imported in 1951 is summarised in the Table below:

	No.	*Value (c.i.f.) Rs.*
Tractors	29	867,114 (including parts)
Ploughs	10	122,460
Plough parts ...	—	12,629

The following quantities of fertilizers were imported:

Nitrogenous fertilizers	*Quantity tons*	*Value (c i.f.) Rs.*
Sulphate of Ammonia	22,179	8,257,600
Nitrate of Soda	6,728	2,586,013
Nitrogenous and Potash fertilizers		
Nitrate of potash	1,506	651,093
Potash fertilizer		
Muriate of potash	5,731	1,668,327
Sulphate of potash	76	25,710
Phosphatic fertilizers		
Precipitated bone phosphate	70	31,233
Lime and other superphosphates ...	260	53,118
Phosphatic guano (Seychelles)	2,968	—
Phosphatic guano	1,935	—

4. Tobacco

Area cultivated to tobacco:—

	Arpents
Flue-cured	501.48
Air cured	217.23
	718.71

Quantity and value of Tobacco produced:—

	Quantity in kilos	*Value in Mauritius Rs.*
"New Varieties" flue-cured	54,626	183,222
Amarello flue-cured	270,396	869,725
Amarello air-cured	160,666	304,628
TOTAL ...	485,688	1,357,575

Amount of leaf used for manufacture in the Colony:—

	kilos
Local leaf ...	406,581
Imported leaf ...	100,075
TOTAL ...	506,656

Export of leaf tobacco:—

	Air-cured Amarello *kilos*	*Value* *Rs.*
To U.K. and HOLLAND ...	5,598	13,095

5. Fibre

The total production of fibre from the 42 decorticating factories was 1,880 tons of which nearly 412 tons were exported. There was also a production of 43 tons of tow and 110 tons of cuttings, the export of these being 89 tons and 115 tons respectively.

The consumption of fibre at the Government Sack Factory and the amount of its products were as follows:—

Fibre received at the Factory	1,248,362 kilos
Fibre processed at the Factory	1,202,474 kilos
Number of sugar bags produced (each of 80 kgs. capacity)	1,084,708 units
Amount of filter-press cloth	57,393 yards
Other cloth	451 yards
Quantity of fibre used for rope manufacture ...	72,670 kilos

The reason for the smaller output in 1951 compared to 1950 is that the Factory was closed down for nearly 2 months to effect necessary alterations for the projected enlargement of the Factory to double its present size.

6. Tea

The total area under tea at the end of the year was approximately 2,120 arpents. Production amounted to 841,160 lb (English) of made tea, an increase of 91,967 lb over the figure for the previous year. In addition 4,238 lb of green tea were made.

Permits to plant a further 167 arpents of tea were issued but only about 55 arpents were planted.

Exports of tea amounted to 129,269 lb. This went mainly to the United Kingdom and France, but small quantities were shipped to Madagascar, Hong Kong, Réunion Island and Seychelles.

7. Copra and Oil

Produce from the Oil Islands:—

Copra	1,568,029 kgs.
Yielding refined coconut oil ...	810,243 ,,
Soap	209,825 ,,
Poonac	538,400 ,,

Imported:—

Copra	490,337 kgs.
Yielding refined coconut oil from above ...	253,969 ,,
Poonac from above	179,650 ,,

Produced in Mauritius:—

Groundnuts	47,774 kgs.
Yielding ground nut oil	17,623 ,,
Groundnut cake	26,443 ,,

Part of the poonac produced from the copra received from the Oil Islands, and all that produced from copra imported by Government and all groundnut cake was supplied to the Government Maize Mill for the preparation of animal feeding stoffs.

8. Import of Livestock

CATTLE

From Madagascar	1,759
From Rodrigues	687
TOTAL	2,446

SHEEP AND GOATS

From Rodrigues	5,691

PIGS

From Rodrigues	2,505
From Other dependencies	29
TOTAL	2,534

POULTRY

From Rodrigues	17,000 (approximately)
From Other dependencies	600 ,,
TOTAL	17,600 ,,

EQUINES

Race horses from U K. ...	18
From Rodrigues	1 donkey
From Agalega	4 mules and 1 horse

9. Alcohol

The quantity of alcohol distilled during the year 1951 was 10,671,126 litres of which 6,593,053 litres were actually exported.

Sugarcane Research Station

Cane Breeding Division

Arrowing was profuse and widespread in 1951. The cross-pollination work comprised a wide range of parental types and could be carried out as contemplated. The breeding programme is dominated by the need for obtaining early maturing varieties and canes for the cool and superhumid areas of the Island. Crosses made at Réduit and Pamplemousses numbered 257 as against 185 in 1950.

The seed-bearing fuzz was very prolific and about 82,000 seedlings have been raised, as compared with 23,000 the previous year. These excellent in a certain number of seedlings batches, but without serious effects due to the high fuzz fertility. Transplanting to pots commenced in August, and a total of 35,300 seedlings has been potted out. The seedlings made good growth even at Hermitage as a result of favourable weather conditions.

Field plantations of the 1951 seedlings were made in December, but could not be completed by the end of the year due to water shortage. A total of 31,000 hybrid seedlings has been transplanted, a figure well above the maximum number planted in 1950. As usual, marginal and central rows of singled-eyed M.134/32 cuttings were included in the populations. B.H. 10/12 and Ebene 1/37 setts have, in addition, been planted in some of the plots containing seedlings bred from these varieties.

Selection from the hybrid seedling populations was made in plant cane and ratoon in August, and 378 seedlings were retained and planted in second-trials.

Four second-trials consisting of 48 sub-trials including 378 varieties were laid down, and 28 harvested. Promising canes were selected in second ratoon and multiplied prior to testing in subsequent trials.

Six third-trials have been planted at Hermitage to test seedlings of the M./44 series against both M.134/32 and the newly released variety Ebene E.1/37. Fourteen trials have been harvested, 6 in virgins and 8 in ratoon. The most outstanding of the varieties selected from third-trials is M.31/45 which appears highly suited to the high-rainfall areas. As for second-trials, much emphasis has been placed on the quality of the selected canes.

Only three variety trials have been planted on estates to test promising home-bred seedling canes. Fifty-nine trials have been harvested during the crop season. Considerable data of the performance of B.3337, B.34104, B.37161 and B.37172, Ebene 1/37, M.213/40 and M.423/41, in plant cane and ratoon, under varying ecological conditions, have been collected. It is likely that the four Barbadian varieties will be considered for release. Of the locally bred varieties, M.296/41, M.311/41 and M.11/43 show considerable promise, particularly the last which possesses the elusive character of early maturity.

As one of the goals of the breeding work is the production of early maturers, maturity tests have been made with the hand refractometer in variety trials, particularly those containing the B. varieties. The tests commenced in July.

Milling tests on M.213/40 and M.134/32 were performed by the Central Board of the Departmental of Agriculture ; canes derived from propagation plots established on several of the larger estates were bulked for analysis.

The variety Ebene 1/37, bred at Highlands S.E., was released for commercial growing and its cultivation recommended for the wetter localities. Approximately 36,000 canes were distributed to planters from the estate's fields under the supervision of the Extension Service Division of the Sugarcane Research Station.

The varieties imported from U.S.A. and South Africa, namely, C.P. 34–120, C.P.36–13, C.P. 36–105, M.336, M.L.3–18, P.R. 905, Co. 419 and Co. 421 were released from quarantine and planted in the open.

Cuttings of several Mauritian varieties have, on request, been exported by air to Nosi-Bé, Pakistan, Cyprus, Réunion Island, Dzaouzi (Comores), Martinique and Guadeloupe. A consignment of M.134/32 cuttings was, in addition, shipped to Seychelles for planting for bacca production.

Fuzz from ten prolific crosses was despatched by air to Pakistan: Pollen from three strong male parent varieties was sent in a thermo-flask to Mount Edgecombe, South Africa, for crossing purposes.

The three Latin Squares laid down to test whether a significant difference in yield of cane can be correlated with the source of planting material of M.134/32, were harvested in ratoon. The results showed that the cuttings obtained from Hermitage Experimental Station gave a significantly lower yield of cane than that from the cuttings from St. Antoine S.E. ; the differences between the other sources were not significant. In the Réduit and Pamplemousses trials, no statistical difference in yield of cane could be found between the various sources. Regarding the refractometric Brix, there was no difference between any of the sources in the three experiments.

Investigations on the use of Aretan solution as a preservative for male arrows were continued. Pairs of similar crosses were made in 0·03 per cent Aretan and SO_2 solutions in adjoining stools. Both methods gave as good results.

Field observations made at Réduit, Pamplemousses and Trianon S.E. indicated that the first embryonic inflorescences began to appear towards the beginning of March in 1951.

Experiments were conducted to try to induce arrowing in the varieties B.H. 10/12 and R.P.8. Juice extracted from cane tops bearing very young inflorescences was injected into the tallest canes available by various methods, with negative results. Auxin extracted with agar agar and applied to canes of these varieties had also no effect in inducing flowering. Regarding the experiment laid down with B.H.10/12 in 1948 to control arrowing by fertilizer dressings, a plot receiving a quadruple dose of phosphate (800 kgs p.a.) produced two arrowed canes. This may be sheer coincidence, and the experiment has been duplicated to determine whether that particular treatment has any definite effect on flower initiation in B.H.10/12. Planting in high rainfall localities and under water logged conditions as means of inducing arrowing is also being resorted to.

Experiments were laid down at the Experimental Stations for rapidly assessing the ratooning power of sugarcane varieties. The experiments include strong, medium and poor ratooning varieties. It is as yet too early to report on the results.

Tests were made in cooperation with the Plant Pathology Division of the Department of Agriculture, to assess the loss in sucrose due to the occurrence of the disease known as Stem Deterioration in M.134/32 and M.213/40. The results showed that the juice of the latter variety is badly affected by the diesase.

Correlation studies were carried out to evaluate the relationship between the refractometric Brix, density Brix and C.C.S. of all samples collected from variety and manurial trials during the crushing season.

The Cane Breeding section was one of the centres of attraction at the Gardens Show held in June at Pamplemousses. The specimens on display gave a brief but comprehensive picture of the most important aspects of the cane breeding work as carried out in this Colony.

A. DE SORNAY,
Plant Breeder.

Chemistry Division

The factorial fertilizer experiments were harvested this year in 5th ratoons with the following results:—

(a) all the trials responded to Nitrogen fertilization, the application of 30 kgs and 60 kgs of Nitrogen per arpent increasing the yield of cane by 38 per cent and 50 per cent respectively ;

(b) the deleterious effect of heavy Nitrogen fertilization on the sugar content of sugarcane seems to decrease in old ratoons ;

(c) three trials out of seven responded to phosphate fertilization and three responded to Potash, but the average response to these fertilizers is still small indicating a rather high status of large estate soils in these nutrients ;

(d) no benefits is derived from the application of pen manure at planting whenever a normal nitrogen fertilization is given to the sugarcane crop.

Results from six lime trials, situated in the humid and superhumid zones, show a slight average gain of half a ton of cane per arpent due to the application of 3 tons of lime at planting.

The Basalt experiment at Hermitage was harvested in 3rd ratoons. This last crop has shown again a very high response to the double dose of basalt, which brings the total gain per arpent from a single application of 182 tons of basalt at planting to 20·3 tons of cane for four crops. It is worth noticing that the increment in cane tonnage due to the application of basalt shows no indication to decrease at the stage of this fourh crop, which means that the basalt is still exerting its full effect and may continue to do so for many years to come.

Arising out of experiments conducted at Central Experiment Station, it seems that the variety M.423/41 responds better than M.134/32 to high fertilization.

With more data on foliar diagnosis of the different varieties becoming available, it is seen that the variety Ebene 1/37, in spite of its K_2O content being equal to that of M.134/32, has a slightly lower content in N and P_2O_5 than the last named variety. Figures for M.423/41 show that this variety is comparable to M.134/32 in N, P_2O_5 as well as in K_2O content of the leaf punch.

Further foliar diagnosis studies indicate the following figures as being the content in N, P_2O_5 and K_2O below which an increase in yield is to be expected after application of the appropriate fertilizer.

	% Dry matter of leaf punch
N	1·65
P_2O_5 ...	0·45
K_2O ...	1·45

S. M. Feillafé,
Acting Chemist,
Sugarcane Research Station.

Botany Division

Once again this Division has been very seriously handicapped by lack of staff, the only Officer available, except for the period July to September, being the Field Assistant in charge of Cultural Experiments, later promoted to Scientific Assistant, Botany Division.

The main work performed was in connection with control of weeds by chemical means. Four look-and-see trials on the use of 2–4D and of oil fortified with pentachlorphenol as pre-emergence weed killers were started, but one had to be abandoned when groundnuts were planted in the interlines of the canes treated. In a second trial, the sugarcane growth was so vigorous that no real assessment of weed growth was possible. Final results are therefore only available for one experiment, the fourth one not yet having been concluded.

In the one trial for which results are available the number of weedings necessary was halved, and at the same time there was no evidence of reduction in yield in the treated plots, as shown below:—

Yield of control plots	28·0 tons per arpent
Yield of treated plots	29·4 ,,

Experiments have also been conducted with organo-mercurial compounds to determine their influence on germination and growth. One such compound, Agallol, gave results comparable with those obtained from Aretan.

The study of interplanting sugarcane with certain food crop plants has continued. Five Latin square trials were harvested, without giving any significant results. Eleven simpler experiments are now being conducted, with larger individual plots, to try to ascertain whether the planting of food crops in the sugarcane interlines has any depressing effect upon the yield of the sugarcane.

B. Nundloll,
Scientific Assistant.

Extension Service

Staff. On 1st September, Mr. B. Roy, Field Demonstrator, left the Extension Service and joined the Agricultural Division.

From 20th August, Mr. Sooltangos, Field Demonstrator, was called upon to help the Central Board as Test Chemist in addition to his normal duties. The writer returned from leave and resumed his duties on 19th February.

Meetings. During the year, 117 small planters' meetings were convened by the Field Demonstrators who lectured on all important problems connected with cane cultivation. As many practical demonstrations were given by means of charts and apparatus and, when convenient, lectures were given in the field on the spot of the Demonstration Plots.

Demonstration Plots with Artificials. Twenty four demonstration plots have been established during the year, while twenty nine have been harvested and weighed. In some cases balanced fertilization has brought increases in cane yield of 75 per cent and over.

As a rule, phosphate deficiencies have been more marked and more frequent than potash deficiencies.

Demonstration plots with Varieties. The only new varieties planted in the demonstration plots have been Ebene 1/37 and M.423/41. Eight plots have been harvested during last crop ; three of them contained the two new varieties mentioned and five contained only the latter variety. In all cases the variety M.423/41 has given appreciably better yields than the standard M.134/32. Ebene 1/37 did not prove better than M.134/32 ; at the time of writing, however, the ratoon crop of this new variety seems very promising.

Three new plots including the varieties mentioned above have been laid down in the course of the year.

Demonstration plots with Aretan. Twelve demonstration plots have been laid down to shew the beneficial effect of Aretan on the germination of cane cuttings. They have all proved very conclusive, particularly so in the case of the late plantations which have suffered from a comparatively dry season. Small planters are now using this chemical on a very large scale.

Weed Killers. Small planters have proved particularly interested in weed-killers. Thirty-six demonstrations have been effected on various weeds. Although most of these demonstrations have proved conclusive, only few planters have adopted this method of weed control. The main reasons for this relatively low enthusiasm are:—

(a) high initial cost of equipment ;

(b) difficulty in obtaining the equipment ;

(c) necessity for a certain degree of organisation, which seems to be still beyond the reach of most small planters.

Soil Erosion. On the occasion of the Agricultural Show at Pamplemousses in June last, a stand was erected in cooperation with the Chemical

Division of the Sugarcane Research Station in order to demonstrate the effect of heavy showers on sloping land and indicate the proper methods of cultivation thereon in order to avoid erosion. After the Show, the stand was transported to five different regions of the Island where soil erosion constitutes a serious problem. The Field Demonstrators attached to these regions organised meetings during which they lectured on soil erosion and gave demonstrations by means of the stand. In all cases the demonstrations were followed with great interest by a large number of planters and immediate results have been obtained in several instances.

Phosphatic guano. The samples of Phosphatic Guano obtained from various small planters show that there has been much less fraud in the sale of this fertilizer.

Transport of Artificials. The new regulations authorizing the transport of artificials, in small quantities, by private means has been very much appreciated by small planters and will undoubtedly have a beneficial effect on their cane yields. As was indicated in the Annual Report for 1949, this factor was very important in limiting the use of artificials by small planters.

Distribution of M.423/41 and Ebene 1/37. The Extension Service was responsible for the distribution to planters of the cane varieties Ebene 1/37—recently released for commercial cultivation—and M.423/41 ; 36,000 canes and 5,000 canes respectively of these varieties were distributed during the year. In the case of Ebene 1/37, Highlands S.E. supplied the material and collected the proceeds, while the Extension Service of the Sugarcane Research Station arranged for the actual distribution.

Prohibited Sugarcane Varieties. A fair amount of Coimbatoire varieties, Uba seedlings and other sugarcane varieties, not included in the list of authorized sugarcane varieties, are still being grown by small planters of Flacq and Réunion factory area. Special arrangements have been made in connection with the Coimbatoire varieties but it is estimated that about 250 tons of the other varieties have been rejected by the millers in Flacq district.

Other activities. In addition to the activities mentioned above and to advice given to small planters and several big planters, the officers of the Extension Service encouraged the formation of Cooperative Credit Societies in a number of small centres where they did not exist. They also helped other divisions of the Sugarcane Research Station in harvesting field trials and performing maturity tests, etc.

About 30 enquiries were also carried out on behalf of the Officer-in-Charge Fertilizers in connection with applications received from traders for permission to sell artificials.

G. MAZERY,
Senior Field Demonstrator.

Central Board

In 1951, the Central Board was set up with Mr. N. Craig, Deputy Director of Agriculture, as Chairman, and the following members: —

Millers' Representatives	Adrien Wiéhé, Esqre., Factory Manager of Labourdonnais S.E. F. N. Coombes, Esqre., Manager of Mon Désert-Alma S E.
Big Planters' Representatives	M. Souchon. Esqre., Manager of Espérance. N. Mc Gregor. Esqre., Manager of Mon Désir.
Small Planters' Representatives	M. Burrenchobay, Esqre., Acting Registrar of Co-operative Credit Societies. J. Chundunsing, Esqre., Secretary, Federation of Credit Co-operative Societies.

Meetings of the Central Board

The Board held 21 meetings during the year. The main business dealt with was as follows: —

2 meetings relative to assessment of planters' sugar ;

9 meetings relative to protests against assessment of planters' sugar ;

4 meetings relative to disputes between Millers and Planters.

6 meetings relative to application for changes of delimitation.

Registration of Cane Contracts

9,640 cane contracts were received for registration during the year. The total number of contracts registered and in force for the 1951 crop amounted to 15,066 referring to 19,170 planters, out of which 10,645 referring to 16,462 planters were on a provisional basis. The number of planters has apparently increased from 16,300 in 1950 to 19,170 in 1951. The increased amount of land under cultivation does not seem to be the only factor justifying that increase. It seems that for taxation purposes plots of land formerly cultivated by one person are now cultivated by several persons.

Sugar Factory Licences

Permits were delivered to the 27 factories which operated during the year. New plans were supplied to the factories whose areas had been altered.

Permits to Middlemen

43 permits were delivered to middlemen during the year. The Accountant of the Central Board made an enquiry into the dealings of middlemen with a view to ascertaining the amount of sugar which a middleman should retain for his services. The report of the Accountant is being considered by the Board.

Delimitation of Factory Areas

Twenty nine applications for changes of delimitation of factory areas were received by the Board. In six cases the requests were granted.

Investigations

Sixty investigations were carried out relative to delimitation of factory areas and to disputes between millers and planters. In several cases disputes were settled amicably.

Control of Cane Weighbridges

A total of 163 weighbridges dealing with planters' canes were tested during the year. On first inspection 117 were found to be acurate and 38 had to be re-adjusted before the necessary certificate could be granted. Of the 8 others, 7 were found to be accurate at the second examination and one had to be examined a third time.

None of the weighbridges condemned by the Inspector in 1950 could be replaced due to delays in delivery. One weighbridge was condemned after the crop.

248 surprise checks were carried out at various weighbridges and 364 vehicles which had been previously weighed were re-weighed. For the first time since the establishment of the control on weighbridge the weight of all the vehicles checked was found to be correct.

Cost of Transport of Canes by Road and Tramway

Although the economic tendency is to shift the carrying of canes from tramway to road, the tonnage of canes transported by tramway showed an increase on the 1950 figures. This is due to the fact that the tonnage produced was a heavy one and facilities of unloading canes transported by road at factory yard are still inadequate.

One factory in the North has ceased operating its tramway. One or two others will probably soon come to the same decision. The average cost of transport of canes per ton-mile on estates was 92 cents for tramway and 75 cents for road.

Cane Testing

The number of planters entering into provisional contracts with the miller increases constantly. In 1951, 14·1 per cent of planters had fixed contracts against 23·4 per cent the previous year, the result being a considerable increase in the activities of the cane testing service of the Board. During the crop 10 Temporary Test Chemists were employed and the number of tests carried out reached 5,263.

Sucrose content tests were again carried out in one of the factories on representative samples of all canes manipulated (including estate canes). The results obtained were as satisfactory as previously, as may be seen hereunder:—

	Factory		
	A	*B*	*C*
Sucrose per cent cane as determined by factory control	15·13	14·91	13·55
Sucrose per cent cane as determined by Central Board methods ...	15·14	14·87	13·57

It should be mentioned, however, that the two methods may be compared only when:—

(1) The weights of juice and of bagasse are correctly ascertained for the factory control.

(2) The samples for analysis are representative.

(3) There is no destruction of sugar between sampling and analysis.

(4) The same methods of analyses are used.

Assessment of Planters' Sugar

As mentioned in the last report nine millers objected to the awards made by the Board for the 1949 crop. At a later date three of the Millers withdrew their protests. The first case which was heard was that of Réunion Ltd. and the Board taking into consideration amongst other factors, production costs, reduced the original assessment of 85 kilogs (based on 2/3rds planters extraction) per ton of cane to 81 kilogs. The planters considered that according to Clause 6(2) of Ordinance No. 47 of 1941, the Board was under no circumstances entitled to allow to planters less than two-thirds of their extraction. The planters brought the case to the Supreme Court and moved for the issue of writs of *certiorari* and *mandamus* to bring up and quash the decision arrived at by the Central Board.

The application was dismissed by the Supreme Court. The planters have obtained leave to appeal to His Majesty in Council from the judgment of the Court. In the meantime the Central Board had heard and decided upon the other cases reducing the amount of sugar originally awarded by $\frac{1}{2}$ to $2\frac{1}{2}$ kilogs per ton of cane, according to the merits of each case, on the understanding that the full 2/3rd would be paid by the millers in case the Privy Council decides in favour of the planters.

Six millers objected to the preliminary assessment of the Board for the 1950 crop. All the objections were subsequently withdrawn, following an agreement reached between the different millers and their planters to the effect that the planters would receive the quantity of sugar originally assessed by the Board less the following amount per ton of cane: St. Antoine 1 kg., Belle Vue 2·5 kgs., Beau Plan 1·5 kgs., Solitude 2·5 kgs., Labourdonnais 2·0 kgs., and Réunion 2·5 kgs. The reduction was on an average less than that allotted by the Board the previous year. Twelve planters and one Credit Co-operative Society filed objections of minor character.

Cane Varieties

The variety E.1/37 was added to the list of varieties which may be planted and propagated in the Colony. This variety is more suitable to the wetter parts of the island. Sucrose content tests were carried out in factories with a view to ascertaining the value of the varieties M.213/40 produced by the Sugarcane Research Station.

Report of the Ad Hoc Committee

The Committee appointed to advise on the Constitution of the Central Board and other matters connected therewith submitted their report (Sessional

Paper No. 7 of 1951) in April. The recommendations on the principles on which sugar division should be made are that the present ratio of division of two-thirds to the planters and one-third to the miller should continue to form the basis of calculation in order to arrive at the inital basic ratio of sugar division, but certain adjustments should be made as regards:—

(a) increase cost of bags ;

(b) factory residues should be given to planters according to ratio adopted for sugar and consequent adjustment to be made in assessing sugar ; and

(c) variation in cost of transport of sugar from factory to the docks.

The *ad hoc* Committee also recommended that:—

The Board should in future consist of the following Officials:

(1) A high-ranking financial officer as Chairman ;

(2) A legal man of at least 10 years standing ;

(3) A Sugar Technologist.

A right of appeal should be granted against the decisions of the Central Board.

R. Avice,
Registrar, Central Board.

Agricultural Division

Staff

Though the strength of the Division has slightly improved with the nomination of additional officers, there are still ten posts to be filled, viz., two posts of Senior Agricultural Officers, five posts of Agricultural Instructors and three posts of Scientific Assistants.

The Deputy Director of Agriculture, Mr. A. North Coombes, who is the head of the Agricultural Division, went on overseas leave on 15th June, 1951, and the writer was appointed Officer in charge of the Agricultural Division to carry out administrative work during Mr. North Coombes' absence in addition to his own duties. He was also acting as Government Tobacco Officer up to the 30th September, 1951.

On the departure of Mr. North Coombes, Mr. J. H. Julien, Agricultural Officer, was appointed to replace him in an acting capacity as Lecturer in Agriculture at the College of Agriculture.

The following officers were appointed during the year under review:—

Mr. L. Moorlee, Agricultural Instructor, was promoted to the rank of Agricultural Officer on 16th August, 1951, with retroactive effect from 10th July, 1950. This officer gave assistance to the Tea Division from June to September, 1951.

Mr. J. Duhamel, Plant Inspector, Plant Pathology Division, was appointed Agricultural Officer, under the Development and Welfare Scheme, as from 31st July, 1951.

Mr. B. Roy, Field Demonstrator at the Sugarcane Research Station, was appointed Temporary Agricultural Officer as from 4th August, 1951.

Mr. L. Suzor, Senior Research Assistant of the Tobacco Board, was appointed Government Tobacco Officer as from 1st May, 1951.

Mr. E. Farla, who had been appointed since 2nd October, 1950, as Temporary Agricultural Instructor, was permanently appointed to this post.

Mr. E. T. La Gaité, Clerk at the College of Agriculture, was transferred to the Division on 4th August, 1951.

Overseers S. Naik and P. Hungley were promoted from Grade II to Grade I with retroactive effect from 1st July, 1951, while Messrs. N. Motur, J. Abraham and K. Nathoo were appointed Overseers Grade II as from 1st December, 1951.

Experimental Stations

At the Central Experiment Station, additional land having been obtained from Le Réduit Grounds, 4½ arpents have been cleared from stones and levelled by the bull-dozer of the Food Production Board.

The 30,000 cubic foot capacity reservoir started at the end of 1950, was completed. New canals, covering about 4,000 feet, were constructed during the year.

Boundary walls of a length of 1,450 feet were erected in order to prevent plantations being damaged by stags.

As in the past, foodcrops were produced on a large scale at the Station in order to have as much planting material as possible to be distributed to planters in case of emergency.

Late in the year experimental trials were started in connection with the distillation of essential oils.

At Pamplemousses, work was carried out on the same lines as in previous years.

At Barkly, a new reservoir of 19,000 cubic feet capacity has been dug and the masonry portion of the work will be completed in 1952.

425 feet of concrete canals were constructed so as to irrigate new extension lands.

New land was obtained from the Prisons Department and clearing work was started. At the end of the year a plot of 1½ arpents had been cleared from chiendent, *Cynodon dactylon*, by digging, and stones had been removed therefrom. 525 feet of new road have been constructed on these lands.

At Richelieu New Experimental Station, chiendent was uprooted from 3½ arpents of land in order to establish plantations of food crops in 1952. A temporary office in straw has been built.

The work performed at the Tobacco Research Station is described later.

Gardens

As in the past, the Royal Botanical Gardens at Pamplemousses and Telfair Gardens at Souillac were kept in good condition.

At Pamplemousses 1,600 feet of avenues have been re-surfaced and repairs were effected to several kiosks.

The building of a new concrete camp was started last year and at the time of writing four rooms have been completed and occupied by labourers of the Gardens.

With the help of the Anti-Malarial Department, an area of about 1½ arpents of marshy land has been filled up with soil.

Through the courtesy of the Officer in charge of the Forest Department, old dead trees, branches and snags have been cut and removed. In this connexion it is interesting to note that this work has added considerably to the beauty of the Gardens.

In June, an Agricultural Show was held at the Gardens and attracted a large number of visitors.

Nurseries

A considerable number of plants were propagated at the Royal Botanical Gardens and transferred to Barkly and Abercrombie Nurseries for sale.

At Barkly a new shed for potting purposes has been constructed.

At Abercrombie a small reservoir of 600 cubic feet has been built.

Plant Introduction

Among the more interesting introductions, the following may be listed:—

Peach grafts, Variety Demeure, received from France.

Mango seeds of the varieties NET-TE and MA-NWE-NWE from Burma. Unfortunately these seeds arrived in bad condition and a fresh order has been placed.

A collection of vegetable seeds from Suttons, India.

Bixa orellana, from the Department of Agriculture, Hope.

In addition to the above, the following seeds, imported from abroad, were kindly offered to the Department for propagation:—

Vitex negundo incisa presented by Mr. H. Adam of the Forest Department.

Eucalyptus filicifolia presented by Mr. V. d'Unienville.

Tabebuia Donnel Smithi and *Lagerstroemia Thorelli,* presented by Mr. C. A. O'Connor.

Certified Italian Rye Grass, Hawkins Bay Rye Grass, Sub-terranean Clover, Certified Brown Top, Certified White Clover, Yellow Maize, Australian Paspalum, Certified Akawa Cocks Fern, presented by the Honourable Dr. E. Millien.

Among the species of plants sent to various correspondents abroad, the following may be mentioned:—

Dictyosperma furfuraceum ;
Dictyosperma alba ;
Dictyosperma rubra ;
Latania Verschaffeltii ;
Latania Commersonii ;
Hyophorbe amaricaulis ;
Hyophorbe Verschaffeltii ;
Acanthophœnix crinita ;
Nephrosperma Van Houtteana ;
Deckenia nobilis ;
Roystonea oleacea ;
Thrinax excelsa ;
Colvillea Racemosa ;
Peltophorum ferrugineum ;
Cassia fistula ;
Ipomea horsfalliæ ;
Victoria Regia.

Plant Propagation

Plants were propagated, as usual, on a large scale for sale to the public, free distribution to Government departments and for planting at the Department of Agriculture.

The following is a list of the more important plants sold during the year:—

Avocado grafts	113
Avocado seedlings	360
Breadfruit...	373
Citrus seedlings	1,560
Coconut (common)	224
Custard apple	751
Eupatorium	27,100
Guyava (root suckers)	194
Litchi	1,124
Mango budded	153
Mango grafts	520
Palms	3,951
Peach grafts	297

Production of Vegetable Seeds

The climatic conditions for the production of vegetable seeds were very favourable. No serious outbreak of diseases and pests was recorded. The following table gives the quantities of seeds produced since 1948:—

Type	*1948* *Kilos*	*1949* *Kilos*	*1950* *Kilos*	*1951* *Kilos*
Beans—TOTAL	381·20	328·70	366·40	317·00
Victory	220·80	194·60	239·90	224·00
Golden Queen	64·90	46·80	59·50	42·00
Long Tom	23·10	17·60	10·50	26·00
Prolific Long-podded	29·40	10·80	7·00	—
Canadian Wonder	43·50	58·90	49·50	25·00
Bean Broad—"Bocla"	5·30	0·40	11·23	12·60
Winged	—	4·30	0·98	8·70
Beet Root	0·50	2·50	1·60	2·50
Brède malabar (variegated leaf type)	—	1.20	10·60	2·07
Brède de Chine (blanc)	6·01	13·30	20·72	17·13
Brède de Chine (Bouquet)	26·20	—	8·20	—
Brède de Chine (Salé)	—	12.50	—	10·17
Brède Malabar Hong Kong	—	—	1·00	1·00
Brinjal Farci	—	—	—	1·40
Brinjal Rosita	1·74	1·20	0·79	1·03
Calebasse (Gourd)	—	—	—	2·00
Capsicum—TOTAL	0·47	2·20	0·36	1·50
Chinese Giant	0·36	1·10	0·36	1·00
Neapolitan	0·11	1·10	—	—
Maul's Red Hot	—	—	—	0·50
Carrot	2·40	2·50	2·50	2·50
Cauliflower	7·00	2·50	4·42	1·62
Coriander (common)	—	109·50	97·80	157·00
Coriander (Morocco)	—	—	43·60	107·50
Cowpeas	16·50	55·40	22·65	20·00
Cucumber (Indian Type)	—	—	—	1·60
Leek	1·20	1.20	1·00	1·00
Lettuce—Total	3·82	5·20	4·61	7·40
Blonde d'été	2·10	1 80	0·48	1·50
Iceberg	0·52	1·60	1·18	0·50
Mignonette	0·49	1·00	0·59	1·60
Sucrine	0·11	0·50	1·58	1·40
Tom Pouce	—	—	—	1·40
Webb's Wonderful	0·60	0·30	0·78	1·00
Okra (lalo)	—	—	3·20	17·00
Onion (local)	—	1·20	0·42	0·80
Peas—TOTAL	200.10	198·80	433·17	232·30
Blackeyed Susan	36·70	20·40	77·40	5·70
Greenfeast	154·70	132·20	283·80	194·00
Local	8·70	46·20	71·80	32·60
Telephone	—	—	0·17	—
Petsai "Distin's type"	10·62	7·40	11·90	3·80
Radish	1·83	5·70	1·02	1·00
Rave	43·50	—	13·60	—
Salsify	10·50	10·00	8·11	4·00
Solanum nigrum (Brède Martin)	0·52	3·00	7·63	17·14
Tomato—TOTAL	1·38	0·60	1·88	1·05
Marglobe	1.38	0·60	1·42	0·80
Stonor's M.P.	—	—	0·46	0·25

Revenue

Although there has been no increase in prices, the revenue derived from the sale of plants and seeds, including the value of material supplied free to Government Institutions, reached the unprecedented figure of Rs. 17,039 as shewn below:—

Stations	1948		1949		1950		1951	
	Plants Rs.	Seeds Rs.	Plants Rs.	Seeds Rs.	Plants Rs.	Seeds Rs	Plants Rs.	Seeds Rs.
Barkly...	3,179	2,470	4,077	3,447	3,638	3,671	6,769	3,767
Abercrombie... ...	3,803	—	4,697	157	4,919	104	4,947	146
Free to Government Institutions... ...	394	644	270	649	253	1,221	570	840
TOTAL	7,376	3,114	9,044	4,253	8,810	4,996	12,286	4,753

Fibre Experiments

The field of Furcraea and Sisal at La Chaumière, planted in November 1945, is still under trial and leaves are cut every 6, 12 and 18 months.

Some of the results obtained from this trial were published in last year's report. Further results will be published in due course.

At Richelieu, an additional area of seven acres was put under cultivation during the year and eight experimental plots were established thereon, making an aggregate of about 14 acres under aloe cultivation.

The eight experiments laid out during the year are as follows:—

(i) 1 fertilizer trial ;

(ii) 2 costing trials to determine the cost of production in the field ;

(iii) 2 spacing trials ;

(iv) 1 spacing trial with foodcrops (manioc, etc), in the interrows ;

(v) 2 spacing trials with Acacia *(Leucaena glauca)* in the interrows.

In the one year old plantations, it was observed that the bottom leaves of some of the aloe plants were attacked by some sort of disease, mainly at their butt end. In the fertilizer trial, it was recorded that the incidence of the disease was high in plots that had not received potash, whereas the disease was almost completely absent in those that had.

The results seem to indicate that the disease might be due to some physiological factor.

10,000 young plants will be ready for transplanting early in 1952.

All the aloe plants in the trials and in the collection of varieties are now well established and are making good growth.

Allotments

This year, too, the Allotments Relief Scheme has been totally administered by the Agricultural Division.

The total area under cultivation by the allottees was 228 acres. The population on the various allotments amounted to 715, occupying 137 huts.

As compared to previous years, there is an encouraging increase in the keeping of livestock by the allottees.

Sixty-five applications for land were received during the year and the Allotment Committee met 12 times to interview the new applicants and for general administrative purposes. Ninety-nine persons were interviewed, 10 allottees were evicted for serious neglect of land and 2 left on their own accord.

As usual, the various allotments were regularly visited and advice given to ensure the satisfactory upkeep of land by the plot holders.

Acknowledgement

In concluding this report on the work accomplished during 1951, I wish to lay on record my appreciation of the steady assistance and loyal collaboration I have received from the staff of the Division.

E. Lesur,
Officer-in-charge,
Agricultural Division.

Agricultural Division—Rodrigues

Staff

Mr. L. P. Regnard, Agricultural Officer, was granted study leave to be spent in Mauritius. He left Rodrigues on the 11th March and returned on the 5th May. During his leave he discussed various matters in Mauritius on behalf of the Magistrate, was interviewed by the Honourable Members of the Legislative Council on subjects concerning Rodrigues and also made a talk over the radio on Rodrigues in general. Mr. M. Fakim acted as Agricultural Officer during his absence.

Mr. M. Fakim, Acting Agricultural Instructor, being seriously ill since the 1st November was sent back to Mauritius, on leave, by the SS. *Floréal* which sailed on the 21st November.

Mr. S. Bagwant, Agricultural Instructor, arrived on the 20th November to replace Mr. Fakim. He occupies the Overseer's quarters at Oyster Bay.

Climatic Conditions

The monthly precipitation registered at Oyster Bay Experiment Station was as follows:—

Month	*1951 mms.*	*Mean 1941-50*	*No. of rainy days*	*Highest rainfall registered in one day*
January	84·0	205·9	16	18·2 on the 27th
February ...	219·3	180·2	18	93·8 — 15th
March	73·6	168·6	16	16·7 — 29th
April	13·8	206·8	6	4·1 — 22nd
May	70·9	96·6	6	41·9 — 19th
June	55·8	83·0	10	13·4 — 24th
July	77·9	84·7	15	19·6 — 3rd
August	78·4	97·1	17	10·0 — 8th
September ...	11·5	49·3	6	3·0 — 2nd
October	104·5	31·3	15	44·2 — 30th
November ...	66·8	33·6	9	35·2 — 24th
December ...	47·3	61·1	2	28·5 — 10th
	903·8	1,298·2	136	

General Conditions

The year under review was not very favourable for agriculture chiefly for maize which is the staple food for the Rodriguans. Farmers who planted in December last year (rainfall 115·7 mms) had a very good crop but those who were late planting suffered from a shortage of precipitation during March, April and May. Hot winds in March caused excessive evaporation. Some farmers had no crop at all and it is estimated that the maize crop throughout the island was reduced by 40 per cent. Rats caused havoc in plantations at Baie Malgache, poison bait prepared with Barium carbonate and ' Rhodine ' was distributed to farmers.

Beans have been planted on a large scale this year. Again the lack of rains during the growing season reduced the yield.

Garlic and Onions did better than last year and fetched a good price with traders.

Groundnuts and Phaseolus radiatus yielded poorly.

Beneficial rains occurred towards the end of October, farmers upcountry started planting maize in November, these look promising and should give a good crop if there are no cyclones.

In spite of the grazing pressure in the Cattle Walk animals on the whole are in better condition this summer. The number of cattle, sheep, goats and pigs have increased, the census of animals is given below:—

	1950	*1951*
Cattle	4,787	4,963
Sheep	2,970	3,180
Goats	4,982	5,016
Pigs	3,293	3,395

Fowls were not so plentiful, this was due presumably to the lack of maize, the laying season was also later than usual.

It was again impossible to lay out demonstration plots owing to the lack of staff, every effort will be made next year to demonstrate on a small scale by distributing phosphatic guano and sulphate of ammonia to some farmers who are interested.

Ten tons of Red Seed Beans were purchased by the Agricultural Officer on behalf of the Executive Officer, Food Production Board and shipped to Mauritius.

Experiment Station

Yield trials have been made with Maize (4 varieties), Beans (10 varieties), Sweet Potatoes (22 varieties), Cassava (29 varieties), Yams (13 varieties), Groundnuts (8 varieties), Tomatoes (3 varieties), also with other crops such as tobacco, corn flour, arrow root, tumeric, ginger, coriander, linseed, phaseolus, cow peas and oats. The latter although planted late in the season yielded 305 kilos per acre.

The following plants have been distributed to planters: Citrus 622, Bread Fruit 55, Coconut 148, Peach (grafted) 15 together with other plants such as Jack fruit, mango seedlings, guava, custard apple, avocado pears, paw-paw, ornamental plants etc.

135½ kilos Victory beans produced at the Station was sent to the Department in Mauritius to be sold as planting material.

Stock Farm

Cattle. Four heifers have been selected and purchased locally to improve the cattle in Rodrigues. They have been mated with the crossbreed Friesland Bull purchased locally last year.

The following are now raised at the Station:—

Bull 1, Cows 3, and Heifers 4.

One heifer and one bull calf were born this year making a total of 10 animals.

Warts. Four calves were treated and completely cured.

Keratitis. Cases were not so numerous this year.

Sheep. One Dorsian ram was sent by the Department for use in Rodrigues.

Mule and Donkeys. A mule was imported this year and is used for riding.

There are now 5 Jacks and 9 Jennies at the Station ; two were born this year making a total of 16.

A paddock has been built round the stables and is being used for the mule. The one used for cattle has also been completely rebuilt using concrete posts made locally instead of timber ones.

Poultry. White Leghorns have been introduced for the first time in Rodrigues, 45 eggs have been generously offered by the Montebello Farm.

Total number of birds at present:—

Rhode Island Red ...	3 cocks	22 hens	27 chicks
White Leghorn	1 cock	2 hens	10 chicks

Twelve cocks and 4 hens Rhode Island Red have been sold by public auction and one cock was sent to Mauritius to be examined by the Veterinary Officer.

Turkeys. Present number: 2 cocks, 14 hens, 49 chicks.

The following birds have been shipped to Mauritius:—

1 cock and 2 hens for the Training College, Beau Bassin.

1 cock and 2 hens for the Montebello Farm, Pailles.

Eggs. Rhode Island Red. Total number of eggs collected for the year: 2,490 of which 134 were placed under broody hens, 2,283 were sold to the public and the remainder fed to chicks.

Turkeys: Total number of eggs collected: 395 of which 206 were placed under broody hens, 144 were sold to the public and the remainder fed to chicks.

Soil Conservation

The demand from farmers to have their field contoured is great, during the year the following areas have been reclaimed:—

Locality	*Acres*	*Contoured previously*	*Total area contoured (Acres)*
Baie Malgache	85·25	129·50	214·75
Pointe Monnier	2·75	9·00	11·75
Rivière du Sel	18·00	—	18·00
Graviers	7·00	—	7·00
Rivière Coco	13·50	—	13·50
Union	37·75	—	37·75
Camp du Roi	27·25	—	27·25
Deux Montagnes	14·75	—	14·75
Papayes	2·50	—	2·50
Diamant	29·00	—	29·00
La Ferme	4·00	—	4·00
Citrons	2·50	—	2·50
Crève Cœur	—	9·00	9·00
Oyster Bay	—	15·25	15·25
TOTAL	244·25	162·75	407·00

Total area contoured in 1951	244·25 acres
Cost	Rs. 69,545.64
Average cost per acre	Rs. 284.00
Total length of walls built	252,333 feet
Average cost per running foot of wall	27·5 cents
Average length of walls per acre ...	1,033 feet

Tobacco

The export of tobacco for the last few years had considerably decreased. With better prices obtained now planters seem to be again interested in this

culture. Nineteen persons have applied for permits to export 622 kilos of dried leaves for the 1951–52 crop.

A severe attack of Mosaic occurred on Amarello tobacco, this with the lack of rains will considerably reduce the crop.

Maize Bins

No planters brought their maize to be stored by Government this year owing to the reduced crop. A balance of 692½ kilos of maize stored last year was on hand after returning to planters their maize, this was due to over-estimation of 10 per cent for loss in weight and sweepings plus 213½ kilos unclaimed. This surplus was stored in the 3 tons bin erected at Oyster Bay in order to test the bin.

Land Tenure

Efforts have been made this year to sort out from the Land Register persons who were dead and whose names still appeared in the books.

The following leases have been made or renewed during the period under review:—

	acres.
Agricultural lands	215
Residential sites	193
Fishing posts	7
Cattle posts	50
Coconut plantation	1
Shop site	1
Salt pans	2

Most of the time of the Agricultural Officer is still spent on questions dealing with land tenure, visiting sites and measuring land.

School Gardens

The Acting Agricultural Instructor visited School Gardens at Latannier and La Ferme whenever possible on gardening days. Unfortunately the Agricultural Officer could not devote personally the time he considered necessary to this important task of training farmers in the 'bud' due to other important things he had to attend to owing to the lack of staff in Rodrigues.

Out of the five boys who had completed their training at Oyster Bay, three have been employed at the Station, one was employed on Soil Conservation work and the fifth joined the R.P.C.

The six Agricultural Students have been chosen from Latannier School for a one year course at Oyster Bay, none from La Ferme School having been willing to join. These will complete their course by the end of January 1952, they are certainly brighter than the boys chosen before due most probably to the more intensive coaching they had whilst at school.

L. P. Regnard,
Agricultural Officer.

Veterinary Division

A. Disease Control

Tuberculosis. The campaign for the control of tuberculosis both amongst milk and herd cattle continued during the year under review. All clinical cases of tuberculosis once detected were removed from the herds and destroyed.

Some 700 herd cattle and 150 milk cows were tuberculin tested. As previously recorded, the incidence of tuberculosis on herd cattle was higher than that on milk cows, 69 herd cattle reacted positively to the test while only 8 milk cows reacted positively. All reactors were discarded from their respective herds, some unfit for human consumption due to their bad physical conditions were destroyed ; others were sold to butchers and their slaughtering was supervised in the abattoirs by Officers of the Veterinary Division.

It is interesting to note that one herd of cattle which was highly infected some years ago has been completely freed from tuberculosis as a result of repeated tuberculin tests with subsequent removal of reactors ; out of 120 animals composing this herd not a single reactor was found this year.

Contagious Abortion. Only 2 cases were recorded at the Government Dairy this year, and the cows were immediately isolated. Agglutination test of the blood of all cows and heifers is resorted to every month, and all animals giving positive reactions are segregated.

All heifers are vaccinated with the S. 19 vaccine, the immunity conferred being of a high degree.

With segregation of reactors on the one hand, and vaccination on the other, it is hoped that the Dairy herd will be cleared from brucellosis in a near future.

Mastitis. Some 25 cows were treated for mastitis by intramammary injection of penicillin in combination with diphenazone with excellent results. In most cases the affected udders returned to normal conditions, but in all cases infection was destroyed and there was no spread of the disease.

Deficiency Disease. A great number of calls for assistance were received from milk cow owners for cows suffering from paralysis, due either to hypocalcaemia, that is a low level of calcium in the blood or to soft bones resulting from a deficiency of minerals in the bones in absence of Vitamin D in the diet. The first cases responded to calcium gluconate injections sometimes with spectacular results, while the second cases responded to Vitamin D therapy supplemented by bone meal in the diet.

Internal Parasites. Hundreds of sheep and goats were treated for internal parasites with excellent results. Those flocks which were heavily infected with the stomach worm have been cleared from these parasites as a result of monthly dosing.

External Parasites. The main ones, ticks and sheep nostril flies, are under control. Research work is being carried out with a view to finding a more effective means of control of the nostril flies on sheep and goats, and the results obtained so far are very promising.

Dipping with gammexane is giving excellent results.

Poultry Diseases. Vaccination against fowl pox has been very successfully resorted to.

Fowl cholera, however, is still inflicting severe damages, many outbreaks, have occurred during the year. It is unfortunate that the manufacturers of hyperimmune serum against this scourge have been unable to export any, but it is hoped to receive some shortly and the evil effects of cholera will thus be under control.

B. Sterility Control

Many sterile cows and heifers after examination were found to be affected with ovarian cysts. Mere enucleation of these cysts has resulted in the normal sexual cycle being re-established.

The demand for enucleation of cysts from cow owners is increasing daily in the light of the outstanding results obtained so far.

Other cases of sterility have been successfully treated by hormone injections.

Examination of Semen of Bulls. The semen of all bulls used for artificial insemination is always controlled through systematic microscopic examinations.

Ovulation. The practice of serving the cows at the Government Dairy twice during the " heat " period, morning and evening, has continued during the year.

The percentage of conceptions is extremely high as a result of such practice.

C. Artificial Insemination

The artificial insemination campaign is progressing satisfactorily. The expansion and extension of the Animal Husbandry Service has contributed to the success of the campaign.

Artificial insemination centres will be operated in different parts of the island as soon as all the vacancies in the Division will be filled.

D. Slaughter Houses and Meat Inspection

The control of the slaughter houses continued to be undertaken by this Division. Special attention has been given to the methods of meat inspection, chiefly concerning the examination of carcasses for presence of tuberculosis.

Overslaughtering of dairy cows has been prevented by prohibiting their slaughter except on permit issued by the Officers of the Division after having on examination found them either unfit for reproduction or suffering from unrecoverable injuries.

E. Veterinary Education

First and third years students of the College of Agriculture were lectured in Veterinary Science and Animal Husbandry.

Sanitary cadets of the Medical and Health Department were given a special course on meat inspection at the end of which they qualified as meat inspectors.

F. Quarantine

All dogs imported into the Island during the year, i.e., 3 males and 5 females, were sent to the Government Quarantine Kennels at Réduit for observation during a period of six months.

G. Importation of Stock

(*a*) *For meat purposes* :—		
From Vohemar	...	1,759 bullocks
,, Rodrigues	...	687 bullocks
		5,691 sheep and goats
		2,505 pigs and about 17,000 table birds
(*b*) *For racing purposes*	...	18 horses from Great Britain
(*c*) *For Draught purposes*	...	1 horse and 4 mules from Agalega and 1 donkey from Rodrigues

General

Mr. Edmond Cartier, a Stock Inspector, retired from the Service during the year after 35 years of loyal and able activities. He was replaced by Mr. F. Nadeau, the Scientific Assistant.

Mr. T. Rivalland, another Officer of the Division, was transferred on promotion to the Animal Husbandry service.

A. DARNÉ,
Senior Veterinary Officer.

Animal Husbandry Division

Staff

At the end of June an Assistant Animal Husbandry Officer and two Livestock Officers were appointed, and a month later a third. At about the same time six posts of Propaganda Agents were filled.

Extension Work

With this increase in staff it became at last possible to launch the animal husbandry extension service planned nearly three years ago, having for its objects the improvement of the milk supply of the Island and the general help of the one-cow man.

One of the Livestock Officers and two Propaganda Agents were given an intensive course of training in field work under the Assistant Animal Husbandry Officer, and at the beginning of September work was started in a relatively small area with pleasing results. The staff quickly gained the confidence of the cow-owners who proved more than willing to co-operate. By the end of the month 33 cows had been artificially inseminated with 76 per cent success ; twenty-six aparently sterile females were saved from the butcher by the enucleation of ovarian cysts and of these twenty were inseminated two days later ; eleven cases of mamitis were treated and ten cured, and a further 33 minor veterinary cases were attended with success.

By the middle of November it was possible to open up another extension area and expand the first. For the time being only the Livestock Officers are actually doing the artificial insemination and veterinary work, but the Propaganda Agents are being trained and as each qualifies he will be given a sub-area of his own under an Officer. In this way it is hoped to cover the whole of Mauritius in three of four years time. It is planned in April to extend the service to Port Louis and its environs.

The appended table summarises the work done from September to the end of the year: —

Artificial insemination	155
Enucleation of ovarian cysts ...	108
Calcium deficiency and soft bone (successsfully treated)	124
Mamitis	30
Miscellaneous treatment, etc. ...	237
TOTAL	654

Cow-owners were also given advice on the feeding and the general management of their animals. All services were free, but it is proposed to make a small charge at a flat rate for veterinary work.

Heat Tolerance Tests

In August tests were started at Palmar Breeding Centre to ascertain the effect of climatic conditions at the coast on milk cattle of the Friesian and local Creole breeds and their crosses to find out what genotype is best suited to Mauritius and perhaps to other tropical Colonies. They will be continued through the hot months.

The thirty-three animals included in the tests consist of pure-bred Friesians ; $\frac{3}{4}$ Friesian × Creole ; $\frac{1}{2}$ Friesian × Creole ; pure Creoles ; Ongoles, Afrikanders and local Zebus. To date five thousand rectal temperature and a proportionate number of meteorological readings have been recorded. A full report will be submitted on completion of the tests.

The Creole Milk Breed

It is thought that the Mauritius Creole Breed will prove a useful ecotype for the Island and other tropical colonies. If the heat tolerance tests at Palmar prove saisfactory—and indications are that they will—it is proposed to build up an improved herd there by selection.

Feeding and Environmental Experiments

As indicated in last year's report, six average Creole cows purchased from Indian peasants were run at the Réduit Stock Farm under conditions of housing and feed approximating as closely as possible to those to which they were accustomed. Their milk records showed an average of 3·14 litres per day throughout average lactations of 192 days, which would seem to confirm the figure on which past calculations of production have been based. When dry the animals were transferred to a light, airy byre and got into condition for the second phase of the experiment—lactating under as far as possible optimum conditions. One calved a fortnight ago and has reached 11·9 litres per day.

Crossing the Friesian with the Creole

Every indication is that the $\frac{3}{4}$ Friesian $\frac{1}{4}$ Creole is the best for commercial dairies where supplies of fodder and concentrates are adequate, but not for the peasant, the improved Creole being better suited to such conditions.

Contagious Abortion

The incidence of abortion at the Government Dairy fell from 23·5 per cent in 1950 to 4·3 per cent. This may be just conforming to a suspected 4–5 year cycle or due to the methodical use of S.19 vaccine. The question is being studied. In order to save transport, time and handling, this vaccine is now being obtained from Kabete, Kenya, instead of Weybridge. No contagious abortion among peasant-owned cows has been reported by the field staff who are on a constant look out, and there were no abortions at the Palmar Breeding Centre, where it appears to be dying out.

A mass of material—agglutination tests, etc., has been collected for analysis and writing up when time permits. It is hoped that this will be of help in finding the answer to contagious abortion in Mauritius and that it may be of use to research workers elsewhere.

Fertility in Stabled Cows

Work among Indian-owned cows shows clearly that ovarian cysts are the greatest factor in sterility as at the Dairy. Controlled research is to be carried out.

Artificial Insemination

Artificial insemination, which is normally the province of the Senior Veterinary Officer, was, in the extension areas only, handed over to the Animal Husbandry Division as it was felt that the Veterinary Division with its depleted staff would not be able to cope with the demand. This also makes for greater co-ordination.

As already stated under " Extension Work " results have been pleasing, particularly for a new venture. At the rate of a little over one a day 155 cows were inseminated in four months by the newly-formed and still small animal husbandry extension staff. Of the 33 in the first month 76 per cent resulted in conceptions which is good, particularly when the conditions in the field under which the work was carried out are taken into account.

Bulls at Outstations

There were an average of nine bulls at Outstations for use by small breeders ; 948 cows were served—an increase of 210 over last year—of which 227, or 24 per cent, returned to the bull. One more old and sluggish Friesan was disposed of for slaughter. It will be possible early in 1952 to withdraw the few half-bred Friesan × Creoles from service and to replace them by three-quarter breds.

Sale of young Bulls

Five young Friesan and three-quarter bred bulls were sold to breeders in localities where it was felt that they would do most good, and are being well patronised by neighbouring cow-owners. The demand is at present greater than the supply, but it is hoped soon to be able to meet it.

Loaning of Bulls

A scheme parallel to the above is the loaning of bulls to selected custodians in cow-owner communities far from bull service stations and where artificial insemination has not yet reached. One has been lent to such a community and another, a heavy Friesian, to an estate dairy herd.

Pilot Haymaking Scheme

Fifty-one acres at Plaisance Air Port have been cleared of " Latana " scrub and boulders and it remains to prepare the ground for seeding and subsequent mowing. This work has unfortunately been held up by lack of the necessary machinery and implements which have been on order for some time.

A start was made clearing a ten-acre plot at Forest Side for experiments in haymaking in the wetter parts where land could be made available for expansion. Early rains and the consequent bogging down of the heavy machinery necessitated a halt being called until next " dry " season when it is proposed to try out a new rooting implement.

Palmar Stock Breeding Centre

Sheep. One Dorsian ewe died of pneumonia caused by nasal bot, " Oestrus ovis." The remaining nine have lambed and are again pregnant. One of the rams imported from South Africa was sent to Rodrigues for use on the local sheep. All the Dorsians at Palmar are doing very well on range. Lambs grow out well weighing an average of 60 lb at five months off pasture with no supplementary feed.

The Black Head Persian and crossbreds are also in good condition, though they are slow-maturing and lacking in mutton qualities. The 35 ewes produced 52 lambs in two lambings during the year.

Goats. An Anglo-Nubian doe produced an unauthorised kid by one of the imported bucks of that breed. The other five are due to kid shortly. Twelve does from Rodrigues have been added to the flock for cross breeding experiments.

Internal parasites. Wire worm " Haemonchus contortus," and the consequent secondary infestations have been brought under control by regular dosing. The incidence of nasal bot, " Oestrus ovis," has greatly lessened in the last four months. Although this may be partly seasonal, it is probably due to weekly dipping of all small stock in Gammexane and the spraying of sheds with D.D.T.

Cattle. The young heifers from the Dairy continue to do well, growing out and breeding easily. Four of the older ones have been returned to and have calved at the Dairy and a further five are due to join them. Recently transferred calves are standing up to the summer heat surprisingly well.

All the Ongoles are fit and five of the six females are in calf to the imported bull.

The Afrikanders and local Zebus are, as always, in prime condition. These two herds have been reduced by sale to butchers.

The five cows in milk transferred from the Dairy for heat tolerance tests are doing well. Indications are that the higher air temperatures at Palmar do not greatly affect milk production. This means that a dairy herd there (*see* " The Creole Milk Breed " above) could be an economical proposition. A full report will be submitted on completion of the tests.

Flies. Weekly dipping in Gammexane appears to be controlling the stomoxys and common houseflies.

Government Dairy

As the attached table indicates there has been a substantial increase in milk production over the last three years.

	1949	1950	1951	Increase over 1949		Increase over 1950	
				Total	%	Total	%
Average number of cows in milk	34	29	35	1	3	6	21
Total milk produced (kilos)	95,273	100,631	132,822	37,549	39·5	32,191	32
Average production per cow in milk per year (kilos)	2,800	3,470	3,795	995	35·5	325	9·4
Average daily production per cow in milk (kilos)..	7·7	9·27	10·35	2·65	34·4	1·08	11·6

This increase in production and a 40 per cent reduction in the amount of milk fed to calves enabled the Dairy to add two more welfare clinics to the list of public institutions supplied—*Oeuvre Pasteur de la Goutte de Lait*, Port Louis, and the Child Welfare Centre at Beau Bassin.

Fertility. The increased milk production is to a very large extent bound up with increased fertility—more animals calving more often. By methodical enucleation of ovarian cysts and checking for pregnancy the calving rate of all females of breeding age rose from 54 per cent in 1950 to 70 per cent and will be higher when all shy breeders have been eliminated.

The effect of contagious abortion on fertility is being studied.

Contagious Abortion. As stated in " Contagious abortion " above, only 4·3 per cent of conception resulted in abortion. This is a decrease of 19·2 per cent on last year.

Tuberculosis. The herd was tested and the one and only reactor destroyed.

J. G. S. BENNIE,
Animal Husbandry Officer.

Tea Division

General

1951 has been favourable for crop particularly the first and last quarters. Rainfall has been above the average.

Staff

The Tea Officer, Mr. F. O. Sprinks, returned by air from furlough on 14th July. He broke the journey at Nairobi and stayed a week to study the marketing scheme for East Africa, which is run by Messrs. Brooke Bond & Co., and to visit the Tea area of Kenya which is concentrated around Kericho where also the Tea Research Institute for East Africa is situated.

The Assistant Tea Officer, Mr. J. Brouard, resigned in April and between the date of his resignation and the return of the Tea Officer, Mr. Moorlee, of the Agricultural Division took charge of the Tea Division. He returned to his permanent duties at the end of September. The post of Assistant Tea Officer has still to be filled.

Weather

Weather on the whole has been favourable for crop. Rainfall for the months May to August was excessive but as this is the off season it did not affect crop. Days on which rain fell were less. This is the first full year that rainfall figures have been kept at Crown Land Wooton. The rainfall figures for 1949 and 1950 are taken from Bois Chéri records to compare with those at Wooton in 1951. The amounts are given in inches.

	Bois Cheri				*Crown Land Wooton*	
	1949		*1950*		*1951*	
Months	*Rain-fall*	*Rainy days*	*Rain-fall*	*Rainy days*	*Rain-fall*	*Rainy days*
January ...	10·53	25	14·91	29	28·32	24
February ...	23·61	24	9·18	25	18·19	24
March ...	13·99	26	39·30	30	21·67	27
April ...	11·90	29	21·11	29	7·26	19
May... ...	8·13	28	5·25	15	16·38	22
June ...	14·91	27	18·36	21	26·09	26
July	9·14	25	11·38	25	12 47	25
August ...	5·47	27	12·88	23	22·24	27
September ...	3·29	18	8·10	20	6·36	19
October ...	3 15	21	5·02	18	5·21	19
November ...	8·37	20	7·88	14	6·39	17
December ...	5·90	23	16·21	24	3·98	19
TOTAL	118·39	293	169·58	273	174·56	268

Production

The total production of tea for the year 1951 was (black) 841,160 English lb. and (green) 4,238 English lb, which is an increase of 91,967 lb and 266 lb respectively. This is an increase of 12·40 per cent for black tea, and is due to favourable climatic conditions, better cultural methods employed and a small increase in area. The folowing is the production for the different factories during the year:—

Tea Factories	*1946*	*1947*	*1948*	*1949*	*1950*	*1951*
Bois Chéri ... ... (L. Larcher)	182,225	211,866	230,454	245,719	335,447	379,035
Curepipe Factory ... (R. Corson)	149,130	174,226	185,927	223,916	231,764	252,477
Avenir St. André ... (Ramp. Ramdin)	77,132	80,533	94,917	97,093	74,640	110,690
Pont Colville ... (Raj. Ramdin)	52.024	55,532	71,645	62,328	64,618	66,868
Nouvelle France ... (L. Madhoo and Sons)	29,113	22,803	34,379	29,219	42,724	32,090
TOTAL ...	489,624	544,960	617,322	658,274	749,193	841,160
Green Tea (R. Aubeeluck)	—	2,456	2,454	3,380	3,972	4,23

IMPORTS, EXPORTS AND PRODUCTION
(In English pounds)
1940–1951

Year	*Black tea*	*Green tea*	*Imports*	*Exports*
1940 ...	152,900	—	218,680	—
1941 ...	232,100	—	318,560	—
1942 ...	277,420	—	185,900	—
1943 ...	381,040	—	149,820	—
1944 ...	400,484	—	92,431	—
1945 ...	383,036	—	65,019	—
1946 ...	489,624	—	158,818	—
1947 ...	544,959	2,456	170,377	—
1948 ...	617,322	2,454	126,845	12,850
1949 ...	658,274	3,380	35,537	33,917
1950 ...	749,193	3,972	86,849	47,986
1951 ...	841,160	4,238	47,641	129,269

Imports for the year amounted to 47,641 English lb. and originated from the following countries:—

	Eng. lb.
Hong Kong	6,355
Ceylon	39,395
Kenya	1,438
China	453

Most of the export took place during the first six months of the year, and was exported to the following countries:—

	Eng. lb.
United Kingdom	104,222½
Hong Kong	1,815½
Réunion	1,076
France	19,204
Madagascar	2,750
Seychelles	178
Other Countries	23

making a total of 129,269 English pounds.

AREA UNDER CULTIVATION OF TEA

Year	*Permits issued (arpents)*	*Area planted (arpents)*
Before 1948	1,926·90	1,926·90
1948–49	322·00	62·42
1950	657·53	75·58
1951	167·36 (approx.)	55·00
TOTAL ...	3,073·79	2,119·90

This does not include Parc-aux-Cerfs, 10 arpents seed bearers planted in 1949, Crown Land Wooton, 30 arpents planted in 1950–51.

It is estimated that 1,900 arpents were in bearing during 1951. Average yield per arpent for the whole island is therefore, including green tea, 845,398/1,900=444 English lb. per arpent.

Tea Committee

The Committee held 9 meetings during the year. The chief topics for discussion were:—

Permits for tea planting.

Reconstruction of Factories.

Customs duty on tea packing materials.

Tea Pool.

Experimental Tea Factory.

Amendments to Tea Ordinance No. 51 of 1949.

Tea Seed (Import).

Tea Policy.

Tea Factories

The extension and reconstruction of Bois Chéri Factory made good progress. The two extra withering lofts and the sifting and packing room are finished. On top of the latter, there is a covered in-space to allow green leaf to be picked over. The new rolling room is finished but there is still some machinery to be installed. When finished, this factory will be capable of dealing with over 1,000,000 lb of manufactured tea a year.

The new factory of Mr. Ramparsad Ramdin, which was started towards the end of 1950, made good progress. The structure is finished but it will take some months before the work of installing the machinery and erecting withering tats is completed.

Mr. Madhoo has made a tentative start but there is very little to show at present.

Nothing has been done towards the reconstruction of the factories of Messrs. Corson and Rajcoomar Ramdin.

Labour

Labour continues to be in short supply during the crop months. The use of lorries daily for transporting labour from outside areas is increasing. This must be a bad system for it demoralises the labour and adds to the cost of production. To build camps means a large capital outlay but will pay in the end.

Tea Seeds

Owing to the spread of Blister blight (Exobasidium vexans), East Africa is the only country left from which seed can be imported but our efforts to get seed from there failed as their own requirements absorbed all available supply.

Further contracts have been made and there is a possibility we may get some seed in 1952.

Crown Land Montille—(5 arpents). This area has been kept weeded. 600 kilos seed were harvested, of which 188 kilos were sold to planters, the balance planted at Crown Land Wooton.

Sale for 1952 were:—

	Rs.
Seed	564
Tea Plants	755

Parc-aux-Cerfs—(9 arpents). These seed bearers continue to make good growth. A small quantity of seed will be harvested in 1952. Each tree received 2 oz. of fertilisers in October.

The Gravillea robusta (Silky Oak) wind breaks have made excellent growth. The trees are now 15 to 20 feet high and originated from seed picked in January, 1950. Part of the Tephrosia candida was pulled out and the balance lopped. This legume grows excellently in this area.

Crown Land Wooton

This area now consists of 5 fields making a total of approximately 30 acres, in all.

Field No. 1—(4 arpents). Malayan seed planted early 1950. Cleared mechanically and whilst moving the rocks and tree stumps into lines, too much top soil went with them. The tea is patchy, a large number of supplies are required. As, at present, there is no seed available of good jat equal to that of the original plants, supply is being done by vegetative produced plants from cuttings of the same jat.

The top soil, removed by the dozer into lines, is gradually being spread over the surface again.

Filed No. 2—(5 arpents). The tea in this area, which was cleared by manual labour, has grown excellently and it will be cut across in April and after that plucked lightly. This means it will come into bearing at $2\frac{1}{2}$ years from planting.

The Gravillea robusta, grown as wind breaks, have also done very well and are already giving good protection to the tea bushes.

Tephrosia candida seed was planted down the rows in both Nos. 1 and 2 fields and although the growth cannot compare with that at Parc-aux-Cerfs, it is growing this year and not a failure as in 1951. It is possible the seed was planted too early last year before the cold winter winds had stopped. Lack of the necessary micro-organisms in the soil is another possible reason for its fading out after germinating.

Both fields had artificial fertilisers applied in November.

Field No. 3—(5 arpents). Planted seed at stake with seed from Crown Land Montille in July 1950. Four acres were centered in August and one acre, instead of centering, the stem and branches, if any, were bent over parallel to the ground and pegged down. This way of treating young plants was described in the Tea Quarterly of the Tea Research Institute June—September 1950.

The results so far are very encouraging and already the growth of the new shoots have reached a height of two feet and these are again being pegged down to get a better spread.

This one acre will probably be tapped in March—April and is well ahead of the four acres that were centered. 5,596 stumps were put out as supplies in the 4 acres.

Wind breaks of Grevillea robusta are planted throughout and Tephrosia candida has been planted this year.

Fields Nos. 4 and 5. Cleared and planted in 1951. For some reason, wind breaks were not planted in these two fields but this will be rectified in 1952. In No. 4, the tea was planted seed at stake and is growing satisfactorily. Plants are now at about the right stage for pegging down and this will be done over all the field.

No. 5 part seed at stake and part stumps. All the planted area has been weeded regularly.

Nursery

Vegetative Propagation. The percentages of success of the cuttings planted at the end of 1950 and the beginning of 1951 are now available and are given below:—

	%
Beds 1 – 4 Bois Chéri lines planted 19.9.51 ...	75·07
Beds 5 – 8 Parc-aux-Cerfs planted 23.9.51	48·86
Beds 9 – 10 Bois Chéri planted 15.11.50	56·43
Beds 11 – 16 Highlands planted 5.12.50	57·59
Beds 17 – 18 Highlands planted 4 1.51	69·68
Beds 19 – 31 Crown Land Wooton February 1951 ...	41·81

It will be noticed that beds 5 to 8, Parc-aux-Cerfs clones and beds 19–31, Crown Land Wooton clones, had the lowest percentage of successes. It is worthy to note that all these clones are young tea under two years from planting which rather suggests that better success is obtained from cuttings taken from mature mother bushes.

It is most unlikely that in other countries, cuttings would be used from immature bushes, as there the mother bush would be tested for all the necessary qualities required, and this can only be done with bushes that are in bearing. Here it was a case of there being no good jat seed available, so cuttings had to be taken from these bushes with the best appearance, and those which were known to be grown from good jat seed, in order to get young plants for supplying Nos. 1 and 2 fields. Vegetative produced plants, a total of 2,641, were used as supplies in No. 2 Field.

Leguminous plants. Various legumes are being grown including *Crotolaria Grahamiana* which has not been tried before and *Cassia Didymobottra.*

The *Erithryna Lithosperma* (Dadap) which was growing well has been attacked by borers and unless something can be done to control this pest, it is doubtful that it will be a success under field conditions.

When transferring plants from the Nursery to the field by transplanter, a considerable amount of earth is removed from the beds. To replace this and get the beds back into good condition, compost is being made. Five heaps $10' \times 4'$ have already been made and put out and another ten heaps are in course of making.

The approach road to the office and store, which was very rough was repaired and had a steam roller over it.

A further 15 acres is being cleared from planting during May—June 1952.

F. O. Sprinks,
Tea Officer.

Tobacco Research Station

Weather Conditions

The total rainfall for the year was much above the average for the years 1939–50. March was exceptionally wet, unusual heavy showers fell in June and October, but the last three weeks of November and the month of December were dry.

Repairs to the main distributory canal of La Ferme reservoir were continued during the first months of the year, and in consequence the supply of irrigation water to the Station was frequently interrupted during that period.

The unusually wet months of January and March resulted in a very high incidence of Black Shank disease *(Phytophthora nicotianae,* Breda de Haan) *(P. parasitica,* Dart: emend: Ashby) of tobacco which practically destroyed the plots of flue-cured Virginian varieties and the Amarello strains of India and South Africa and reduced considerably the stand of the other Amarello varieties.

The weather conditions were generally favourable for the sugarcane plantations and the average yields were higher than in the preceding years.

The meteorological statistics for the year are as follows:—

RAINFALL

Months	No. of rainy days		Inches	
	1951	Mean 1939–50	1951	Mean 1939–50
January	13	11·2	6·22	4·30
February ...	12	11·6	3·54	5·70
March	17	13·3	10·38	6·14
April	11	10·6	6·38	3·96
May	10	7·0	1·36	1·35
June	5	8·6	3·84	1·08
July	9	9·7	0·98	1·11
August	6	7·0	0·35	0·47
September ...	7	7·2	0·71	0·70
October	7	3·7	2·47	0·60
November ...	4	6·1	0·79	1·78
December ...	1	9·5	0·11	4·31
	102	105·5	37·13	31·48

TEMPERATURE °FAH.

Month	Monthly mean				Absolute				Mean Relative Humidity%	
	1951		1942–50		1951		1942–50			
	Max.	Min.	Max.	Min.	*H.	*L.	*H.	*L.	1951	1942–50
January ...	85	78	84·9	72·3	90	72	91	69	68·1	64·23
February ...	84	78	85·2	77·0	88	72	93	67	65·8	65·04
March	84	77	84·2	76·9	88	72	91	67	68·1	68·19
April	82	75	82·0	75·6	85	64	88	62	69·5	67·53
May	80	73	79·8	71·9	85	65	90	60	68·4	65·91
June	75	69	76·8	69·4	81	61	84	57	69·1	65·23
July	76	70	74·9	67·7	82	59	83	58	66·8	65·31
August	76	69	75·8	67·8	80	59	82	55	61·9	64·49
September ...	77	70	76·7	68·4	83	60	84	56	62·2	60·32
October ...	79	72	79·1	70·8	83	63	87	59	62·2	57·30
November ...	81	74	82·0	72·6	86	65	88	62	61·6	59·10
December ...	86	78	84·2	74·8	90	70	90	66	56·7	62·34
...	80	74	80·5	72·3	90	59	93	55	65·0	63·75

Tobacco

Owing to the reduced supply of irrigation water from La Ferme Reservoir, the tobacco work of the Station consisted chiefly of the production of seed for growers' use and of tests of some recently imported varieties and of some hybrids. About 5 acres of tobacco were planted.

A. Amarello Field

(a) Progeny plots. The progeny of the best selections of 1950 were planted in plots for further selection. Mass selection was carried out in the best strains for seed production for planters' use in 1952. Self pollination was ensured in all selected plants by bagging the flower heads. The plots were planted from January to June. The first planted plots suffered more from Black Shank disease than the later planted ones, but some strains showed

*Read 'Highest' for H. and 'Lowest' for L.

considerably more resistance to disease than others. Some of the pointed leaf strains—the K strains—have a very large number of leaves on the plant and are consequently very heavy yielders.

The amount of seed collected from the K strain plots should be sufficient for the requirements of the Amarello flue curers in 1952. The seed of the other pointed leaf Amarello strains and of the broad leaf Amarello strains will be available for distribution to the Amarello air curers.

(b) Recent Introductions. The plots of the Amarello strains recently imported from India and South Africa were planted in January but were completely destroyed by Black Shank disease.

(c) Amarello hybrids. Some of the Amarello hybrids—X series—(Amarello × Bonanza) were planted in January. Some of the hybrids showed considerable resistance to Black Shank disease, yielded fairly well, the cured leaf being fairly bright. They resemble the Amarello in most of their characteristics.

B. Virginian Flue-cured Varieties Field

(a) Progeny plots. The flue-cured variety progeny plots planted at the end of the preceding year came up well. The yield was fair and the leaf fairly bright. Seed was collected from these plots for planters' use in the coming season.

The progeny plots of the flue-cured varieties planted in January were practically destroyed by Black Shank disease. No seed was collected from these plots.

(b) Hybrids. One hybrid of Bonanza and Rg., the latter a cigar wrapper Black Shank resistant variety imported from Florida in 1945, was planted in January along with the Virginian flue-cured varieties. The Rg. hybrid proved very resistant to Black Shank under conditions when the other varieties failed completely through the disease. The leaf of this hybrid, however, is very difficult to cure ; the cured leaf has a green tinge and a havana flavour. Some plants were selected and back crossed to the Bonanza parent.

C. White Burley

A plot of this tobacco variety was planted in March and came up fairly well. The leaf had good curing properties and the yield was fair.

Tobacco Seeds and Seedlings

The seed obtained by mass selection in the progeny plots of the Amarello, the White Burley and the Virginian flue-cured varieties was cleaned and put at the disposal of the Tobacco Board for distribution to the tobacco growers of the Island.

At the request of the Tobacco Board, a number of beds were sown at the Station in order to provide planting materials to growers, who, owing to adverse conditions, had failed with their seed beds.

1951-52 Season

Towards the end of the year the Tobacco Board approved the programme of work which the Government Tobacco Officer had prepared in consultation with the Director of Agriculture for the 1951–52 season. The work at the Tobacco Research Station at Richelieu will include investigations with two new types of tobacco, viz: fire-cured and cigar ; a Spacing-and-Variety Trial and DD soil fumigation experiments for the control of eelworms in seedbeds and in the lands, the breeding of varieties, including recent introductions, for resistance to Black Shank diseases and for yield and quality ; crop rotation studies.

The acreage of tobacco planted in the North-West, North or North-East parts of the Island has gradually increased during the last ten years at the expense of the area planted in the West, with the result that the Richelieu Tobacco Station, situated in the Black River district, is at present no longer central to the main tobacco producing areas. The soil and climatic conditions of the Northern districts of the Island are also very different from those prevailing at Richelieu and it is therefore desirable to have a number of tobacco substations in each of these chief tobacco growing areas. Work will be started at the beginning of 1952 at a small substation situated at Rivière du Rempart—the chief tobacco producing district, and will consist mainly of tobacco demonstration plots and seed beds and of investigations with a number of types and varieties of tobacco.

In addition the Government Tobacco Officer will visit the tobacco growers to assist them with advice and will start a survey of the tobacco industry.

At the Tobacco Research Station, the season started in December, when fields were planted with Virginian flue-cured and Amarello varieties. Seed of flue-cured and Burley varieties received from Nyasaland and Tanganyika at the end of the year were sown. Seed of cigar varieties had not been received at the end of the year.

Other Crops

Tobacco is planted at the Station mainly in rotation with sugarcane. The varieties of sugarcane planted are chiefly those of the Sugarcane Research Station of Mauritius, but some Barbados varieties were also cultivated. Weather conditions were in general favourable for the growth of canes, and the yields obtained were good. A total of 718·77 tons were harvested from 22·68 acres—an average of 31·69 tons per acre. Cane cuttings consisting chiefly of M.423/41 were sold to a number of growers.

Some fields were put under maize following the tobacco crop, and the yields of maize obtained were good.

A number of leguminosae, Sunn-hemp, Pois Mascat, Pois d'Achery, Pigeon Pea, Tephrosia were planted in the area formerly occupied by seed beds. All did very well but the Tephrosia did not flower.

Staff

The Senior Research Assistant who left the Colony on the 23rd December, 1950, to study tobacco culture in Central Africa returned on the 25th April, 1951, and was appointed Government Tobacco Officer on the 1st May, and Mr. E. Lesur, who had been Acting Government Tobacco Officer, terminated his actingship on the 30th September, 1951. Other members of the staff, including the Junior Research Assistant, the Overseer and the Clerk were on duty throughout the year. The Breeding Assistant, Mr. J. Abraham, left the Station at the end of November, having been appointed Overseer of the Agricultural Division.

I take this opportunity of recording my sincere appreciation of the good work put up by members of the staff during the year.

L. Suzor,
Government Tobacco Officer.

Entomological Division

A. Pests of Sugarcane

Sugarcane Moth Borers. A study of the parasites of the three species of cane moth borers in the Island, viz: *Proceras sacchariphagus* Boj., *Sesamia vuteria* Stoll., and *Argyroploce schistaceana* Snell., was completed by the Associate Entomologist and has been submitted for publication. This work will serve as a sound basis for attempts to control these pests by parasite introduction.

In July, the Entomologist, accompanied by the Scientific Assistant, visited the nearby island of Réunion and remained there for one month to study the cane moth borers and their parasites. The main object was to determine if the moth borers in that island are definitely the same as the Mauritian species and to discover if they are attacked by parasites which might be profitably introduced into Mauritius. The work was greatly facilitated by the cooperation of the French authorities and the sugar planters of the island, and their helpfulness is gratefully acknowledged. Many specimens of both the borers and their parasites were obtained and these were later submitted to the Commonwealth Institute of Entomology for authoritative identification. When the complete results of the work are available they will be fully reported.

The policy of importing the parasites of *Diatraea* spp. which might find the spotted borer, *Proceras sacchariphagus,* a suitable host, was continued. Sixteen air consignments of *Agathis stigmaterus* (Cress.) were received from the Trinidad sub-station of the Commonwealth Institute of Biological Control and from them a total of 540 females and 30 males were obtained for release. One small consignment of *Apanteles diatraea* Mues. was also received, and the few adult parasites obtained from it were released.

The Sugarcane White Grub, Clemora smithi (Arrow). Since 1947 trials have been made to assess the value of applying Benzene Hexachloride against the white grub, *Clemora smithi*. The progress of this work has been followed in the Annual Reports. The information which has now accumulated leads to the conclusion that the use of this insecticide against *Clemora* is not a practical proposition under the present circumstances although its application does reduce infestation. Because the location of high soil infestations cannot be forecast and because the majority of fields do not have such infestations, the precautionary use of the insecticide is wasteful if there is no increase of yield from fields only moderately infested.

In all trials which have been carried out, application of the B.H.C. dust before the adult beetles appear, either to the open furrows at planting time or to the soil surface in a rough band along the rows, has always resulted in a much reduced infestation as compared to the control plots. In no instance, however, has there been any significant variation in the yield of cane. Unfortunately from the experimental point of view, high infestations have been rare in the trials, but the available data emphasises the known ability of the cane variety M.134/32 to overcome the injury caused by the white grub. It would seem in fact that its ability in this respect is such that there is no loss of cane at all, when cultivation practice is of a good standard, unless soil infestation is very high. In one instance during the trials a soil infestation of about 53,000 grubs/arpent (an average of 20 grubs found in a 3-foot trench along the cane row) did not result in any apparent decrease in the yield of cane.

In view of the above, further trials will not be made, although, of course, observations will be continued with those already laid down.

There is no evidence that B.H.C. at the doses experimented with (up to 100 kilos per arpent of 20 per cent B.H.C. dust with a gamma isomer content of 2·6 per cent) has any depressing effect on the final yield of cane whatever method of application is used. Application to the open furrows at planting time does however visibly and quite appreciably retard early growth at rates of 75 and 100 kilos per arpent. There is also evidence, though not conclusive, that the number of cuttings which fail to develop is higher.

The introduction of *Bufo marinus* was mentioned in last year's report. Four more consignments were received during the year from Dr. F. J. Simmonds of the Trinidad substation of the Commonwealth Institute of Biological Control. Of the 165 toads in these consignments, 89 arrived alive, so that with those received last year the total number introduced is 164.

Quarantined Cane

The systemic insecticide known commercially as Pestox 3 is now used in the cane quarantine greenhouse at the rates of 3 ccs. or 6 ccs. of the 60 per cent anhydride (or equivalent doses of other formulations) per drum of cane. It is applied by adding the anhydride to two litres of water and pouring the solution on the soil surface when the canes have germinated and the foliage is at least about 1½ feet high. The treatment makes the cane juices toxic to

Aphis sacchari Zehnt. for apparently the whole duration of the canes' generation (about 10 months). The value of this new insecticide is clearly considerable for in the past the disconcerting appearance of aphid colonies in the quarantine greenhouse has been not infrequent despite careful precautions. The time and method of application, and also the doses, are not claimed to be the best possible, they are merely those which have been used and found successful. The lower dose appears to be as efficacious as the higher one, and probably both are too high.

B. Control of the Black Sage, Cordia macrostachya (Jacq.)

The dispersion of the seed infesting Chalcidoid, *Eurytoma* (sp. nr. howardii D.T.), by collecting adults from the vicinity of the Department of Agriculture and releasing them in various localities, was completed in February. A total of about 6,500 were collected for this purpose. Its establishment was immediate at all points of release and by the end of the year the insect could be seen flying among *Cordia* bushes almost wherever they occurred.

The early observations which were made upon *Eurytoma* in the field, and which were described in the Annual Report for 1950, indicated that the insect would prove to be of considerable value. These indications have been confirmed by estimates of fruit infestation which have been made during the year under review. By a method of sampling which need not be described in this summary, the percentage of fruits infested (this approximates the percentage of seeds destroyed, for about 90 per cent of the fruits of *Cordia* have only one seed) in the vicinity of the Department of Agriculture was estimated at fortnightly intervals from October 1950 to October 1951 and was found to average 53 per cent. The highest percentages of fruit infestation were found to occur during the hot season when the fruit production of *Cordia* is at its maximum, figures of about 70 per cent being obtained. In the cool season a resting period within the fruits during the last larval instar results in a diminution of the adult population with a consequent fall in the degree of fruit infestation even though fruits are very much scarcer in this season.

In addition to closely following the progress of this insect near the Department of Agriculture, the fruit infestation was estimated at the various colonisation centres in the island in April and also in October. The figures of infestation obtained naturally varied a great deal with the locality, but they were usually high, occasionally as high as 80 per cent and rarely less than 20 per cent.

These results leave little doubt that the introduction of *Eurytoma* will prove to be as successful a measure as the introduction of *Schematiza cordiae*. The effect of its activity will not, of course, be spectacular or readily apparent.

The position of *Schematia cordiae*, the Galerucid beetle which has already caused such a great reduction in the amount of *Cordia* in the island, appears to be stabilizing. While bushes in some places were badly attacked, in other places a certain amount of regrowth could be seen.

C. Insects which atack Latana camara, Linn.

The growth of *Lantana* is not excessive in Mauritius, but in certain ecological regions, notably in the wetter of the lowland areas, it has increased to some extent following the eradication or reduction of *Cordia* growths. Enquiries were undertaken to assess the agricultural importance of the weed, and as the application of biological methods to diminish its growth had been suggested, an investigation was also made of the insects which attack it in the island.

The decision was eventually made that the present growth of *Lantana* is not of sufficient importance to the agricultural community to warrant the initiation of a project for its control. The results of the insect survey which was made between January and May are, however, of sufficient interest to be recorded here.

The insects which were found to feed upon the plant are the following:—

Insect	Part of Plant Attacked
Lycaenidae:—	
Zizula hylax F.	Receptacle, flowers, unripe berries.
Noctuidae:—	
Pardasena virgulana Mab. ...	Receptacle, flowers, leaf buds.
Hypena jussalis Walk. ...	Leaves.
Geometridae:—	
Chloroclystis chlamydata Joan.	Flowers.
Undetermined sp.	Flowers.
Pyralidae:—	
Phycita sp.	Flowers, berries, seeds, leaf buds.
Pterophoridae:—	
Platyptilia pusillidactyla Walk.	Receptacle, Flowers, unripe berries.
Eucosmidae:—	
Polychrosis botrana Schiff. ...	Flowers.
Sphingidae:—	
Acherontia atropos L. ...	Leaves.
Scarabaeidae:—	
Oxycetonia versicolor F. ...	Flowers.
Protaetia fusca Herbst. ...	Flowers.
Hoplia retusa Klug. ...	Flowers.
Curculionidae:—	
Cratopus punctum F. ...	Leaves, flowers, berries.
Cratopus sp. prob. *briachialis* Bah. ...	Flowers.

Insect	Part of Plant Attacked
Coccidae:—	
Orthezia insignis Dougl.	... Stems, leaves.
Fulgoridae:—	
Flatopsis nivea Sign.	... Young stems.

Some of the above species can be discounted at once as of no importance in affecting the vigour of the plant ; these are the species which were not found regularly associated with it, or if so always in small numbers. Putting these aside there remain the following species which were found in at least fairly appreciable numbers on the plant in all regions, and to which *Lantana* is evidently an important food-plant:—

Orthezia insignis Dougl.
Platyptilia pusillidactyla Walk.
Chloroclystis chlamydata Joan.
Zizula hylax F.
Pardasena virgulana Mab.

All of these, except *Orthezia,* feed upon the reproductive parts of the plant, but they are far from being voracious feeders and they do not cause injury which is particularly noticeable. While the injury they cause, though slight, is valuable, only that caused by *Orthezia* is considered to be of importance in appreciably restraining the vigour of the plant. This coccid often occurs in very large numbers on the leaves and stems, and its excrement serves as a medium for the growth of the fungus *Capnodium,* hence the blackened appearance of attacked bushes, the branches of which often die while growth is stunted.

D. Pests of Cajanus Cajan (Pigeon Pea : Ambrevade)

Work on this subject was continued, and experiments with D.D.T. were again performed, as a continuation of those of 1950, against the major insect pests which are the flower and pod borers. *Maruca testulalis* Gey. and *Etiella zinkenella* Tr. are the most important of these, the former bores the flowers and pods and is most destructive in the earlier part of the season, the latter is chiefly a pod borer and is most destructive in pods nearing maturity.

At Réduit where bushes in the experimental plots were in their second season, the spraying experiment made there was completely ruined by a high incidence of Fusarium Wilt* which completely or partially killed nearly 50 per cent of the bushes.

A similar spraying experiment was also carried out at Pamplemousses with bushes in their first season. A plot of 112 bushes was sprayed with 2 per cent wettable D.D.T. and an adjacent plot of the same size was left as a control. About 16 gallons of spray was used and application was made on 18th June, when flowers were becoming abundant. The results were assessed in the manner described in last year's report and they are given in the following tables.

* *F. moniliforme* Sheld. var. *subglutinans* W. & R., the perfect form of which is *Giberella fujikuroi* (Saw.) var. *subglutinans* Edwards.

POD PRODUCTION

Collection	*Control*	*2% DDT*
1st Collection 7.8.51 ...	5,510	28,400
2nd Collection 23.8.51..	34,080	30,475
3rd Collection 19.9.51..	22,450	12,800
TOTALS	62,040	71,675
Average No. of pods produced per bush ...	554	640

POD AND SEED ATTACK

	Control		*2% DDT*	
Collection	*% pods bored*	*% seeds attacked*	*% pods bored*	*% seeds attacked*
1st Collection (7.8.51)	73	44·5	48	26·5
2nd Collection (23.8.51) ...	60	35·4	57	30·2
3rd Collection (19.9.51))... ...	59	38·3	60	44·6

The overall results, expressed as the estimated number of sound dry seeds produced per bush throughout the season (see Annual Report 1950 for the method of estimating such figures) are thus:—

Control	...	1,560
2% DDT	...	1,980

A comparison of these figures with those obtained last year from a similar experiment with bushes in their first season at Réduit is instructive. Firstly, an enormously larger yield from both control and treated bushes is evident, showing that the drier and hotter locality of Pamplemousses is more suitable for *Cajanus* than Réduit, an upland and moderately wet locality. Secondly, while at Pamplemousses the spraying very greatly increased the pod production in the earlier part of the season, there was a compensating effect in the later part of the season when the sprayed bushes produced many less pods than the control bushes. At Réduit this compensating effect later in the season was absent. It thus seems that in a climate such as that of Pamplemousses, which is suited to the plant, a spraying early in the season enables great initial pod production (by suppressing flower attack) which reduces the subsequent ability of the plant to flower and set pods. The total pod production for the season is thus not raised much by spraying, and as the treatment does not materially reduce seed attack, the final result (increase in the yield of dry seeds) is not very appreciable when compared with that obtained at Réduit.

The investigations which have so far been made upon the insects of *Cajanus* are not fully reported in this and previous annual reports. A comprehensive account seems desirable, and if possible this will be produced in the future.

From observations which have been made during the course of this work on *Cajanus*, it is clear, in the view of the writer, that the development of this plant by no means lies solely with the control of its insect pests. A better knowledge of its different behaviour in the various climatic areas, and the variations in the cultivation practices necessary to accommodate the differences, is also necessary. The incidence of Fusarium Wilt, undoubtedly, a disease of very considerable importance, is closely associated with climatic conditions and cultivation practices.

E. Shipment abroad of Beneficial Insects

(a) Mr. J. F. Graham, Entomologist of the Kenya Department of Agriculture, visited the Colony in June to collect and dispatch Scoliid wasps to Kenya to combat the white grub *Schizonycha* sp. The collection and dispatch of the wasps was continued after his departure, seven consignments being sent by air. The majority of the wasps sent were *Campsomeris erythrogaster* Dalman, but a few individuals of *C. phalerata* Sauss., *Scolia carnifex* Coq. and *Tiphia parallela* Sm. were included.

(b) In September a shipment of 100 female *Scolia orytophaga* Coq. was sent to Diego Garcia, in the Chagos Archipelago, where *Oryctes rhinoceros* L. (not *O. tarandus* Ol. as stated in the Annual Report for 1948) is reported to be a bad pest of coconut trees. The wasps arrived in good condition.

In addition, 89 female and 6 male *Scolia ruficornis* F. were shipped to Diego Garcia in December. These were received by air from Zanzibar through the kindness of Dr. L. H. Krauss, an American entomologist. It is a pleasure to acknowledge the assistance of Dr. Krauss, which was readily given even though he was undoubtedly preoccupied with his own work.

(c) Five small consignments of *Apanteles flavipes* Cam., a parasite in Mauritius of the cane borer *Proceras sacchariphagus* Boj., were sent by air to the Trinidad sub-station of the Commonwealth Institute of Biological Control at the request of Dr. F. J. Simmonds, the officer in charge.

F. Miscellaneous

(a) Cactoblastis cactorum Berg., which was introduced last year as a precautionary measure against a possible increase of *Opuntia tuna* Mill., is well established, and many bushes have collapsed as a result of its attacks. The pupae have been found to be parasitised by *Brachymeria* sp. probably *almon* Wlk. (Chalcidicae).

(b) No recovery has yet been made of the Coccinellid *Stethorus jejunus* Casey which was introduced from South Africa last year against Red Spider. A general study of mites of economic importance has been started.

(c) Lectures in Entomology were delivered throughout the year to students of the College of Agriculture by the Entomologist.

G. Acknowledgements

The assistance which is given to this Division by the Commonwealth Institute of Entomology and the Commonwealth Institute of Biological Control is very considerable and it is appropriate to mention here how very much it is appreciated.

To the members of the Entomological Division, I am indebted for the keenness and ability with which they perform their duties.

J. R. Williams,
Entomologist.

Plant Pathology Division

Staff Changes

The Plant Pathologist left on leave to Madagascar on the 15th April and resumed duty on the 15th November. Mr. R. Antoine, A.R.C.S., B.Sc. Hons. (Lond.), Dip. Agric. Sc. (Cantab.), laureate of the College of Agriculture in 1943, who had left for England in 1945, returned to Mauritius in February and, on the 18th of that month, assumed the duties of Assistant Plant Pathologist.

The Scientific Assistant, Mr. J. Duhamel, who was acting as Plant Inspector, was appointed Agricultural Officer during the year, and he moved to the Agricultural Division of the Department on the 31st July, but continued for some months to help in the plant inspection work at the Customs and airport. Mr. A. Jaganathen was appointed temporarily as Scientific Assistant and assumed duty on the 16th July. After a brief period of training, he was stationed at the Plant Inspection Office at the Customs, the Plant Inspector, Mr. L. Orieux, being still on study leave in England.

Diseases of the Sugarcane

No major cane disease again rose this year to prominence owing to the good weather conditions which prevailed during the year and to the absence of cyclones.

Mild attacks of red rot, following borer injury, and of pineapple disease in certain newly-planted fields were recorded. Pineapple disease on rat-damaged standing cane was also observed towards the end of the crop on one estate in Savanne.

A rather severe attack of eye-spot occurred on M.423/41 in a field at Cluny and in another one at Astroea, which was attributed to wet weather conditions.

Chlorotic streak was frequently encountered, chiefly under conditions of high soil humidity, without, however, causing visible damage to the cane.

Internal Stem Necrosis was observed frequent on M.134/32 in canes past the flowering stage. M.76/39 and M.213/40 also showed marked susceptibility to the disease.

The injury known as leaf burn or leaf scorch was observed at various places of the island during February and March. The affection is apparently due to a complex of conditions favouring a rapid loss of moisture by the leaves, not counterbalanced in time by an equal supply from the roots. Evidence into the validity of this explanation was gained by the behaviour of the canes in the cane quarantine greenhouse after the passage of a cyclone which had threatened the island. As usual in such cases, the top and side sashes of the building had been closed, and when two days later conditions had returned to normal, they were opened about the middle of the day. The canes, however, had been submitted to the effect of the sun's rays in the morning of that day, and on opening the greenhouse, the air inside was very

hot and the glass panes were heavily bedimmed with moisture. Many of the young leaves had turned a dull green and they were all, a few days later, showing the characteristics of leaf burn. This incident is quoted here as being perhaps the first direct evidence of the condition being due to a sudden spell of very hot weather which would favour excessive evaporation from the leaves during a short period.

Investigations on the Control of Pineapple Disease of Sugarcane Cuttings

Experiments were carried out by the Acting Plant Pathologist in conjunction with the Botanical Division of the Sugarcane Research Station, in order to investigate the prospects of a new fungicide, Agallol, marketed by Messrs. Bayer Farbenindustrie of Leverkusen, Germany.

The results obtained indicated that the product gave as effective control of the disease as Aretan.

Disease of Furcraea

A disease of the *creole aloe, Furcraea gigantea* var. *Willemetiana,* was reported from the Richelieu Fibre Experiment Station in January. It is characterized by the presence of large yellow lesions, water soaked at first, chiefly towards the butt end of the lower leaves, frequently associated with resinous exudation, and sometimes accompanied by a marginal scorching of the leaves. As the disease progresses, the spots enlarge, become visible on both sides of the leaf, turning dark-brown to black, often encircling completely the leaf near its base, and resulting in the slow drying out of the affected leaf.

A number of bacteria were isolated from the young lesions, but failed to reproduce the disease upon inoculation. It had been observed that the incidence of the disease seemed to be higher after a rainy spell, and specially on plants that had been under water for some time in hollows in the field, but various attempts aiming at maintaining high humidity conditions around the treated plants, also failed to give results. Even inoculations of the leaves by pricking through diseased leaf extract or suspensions of the most promising cultures, in Van Tieghem cells waxed on the leaves and kept covered with a cover glass, failed.

A survey made in October in a fertilizer trial set up at Richelieu at the beginning of the year gave the following results:—

Treatment	*% diseased plants*
Control	32·1
P205	31·5
Ca0	34·5
K20	0·6
N	62·3
NPK	13·1
NPK + Ca0 ...	12·1

The above figures show that the incidence of the disease is considerably lower in plots that had received potassium as compared to plots that had not. Nitrogen seems to render the plants more susceptible to the disease, yet these plants are darker green and much bigger than the plants in the other plots. It is therefore probable that a proper balance of potassic and nitrogenous fertilizers at planting time would lead to a reduction in the incidence of the disease, whatever its cause, coupled with the beneficial effect of Nitrogen on the growth of the plants.

The disease has recently been observed in one other young plantation along the coast in Savanne district, in a small area where the sandy soil is apparently so deprived in nutrients that young filao trees planted in the same field were unthrifty and considerably undersized, save at old charcoal-kiln sites, where the furcraea too was making much better growth and was not seen diseased.

Leaf Roll of Potato

A plot was planted at the Central Experiment Station with diseased seed saved from one of last year's crops raised from Certified seed from South Africa, which had shown a high percentage of diseased plants. All the plants in that plot showed the symptoms of leaf roll.

Another plot was planted with non-certified South African seed of the Up-to-Date variety, the land having been given a thorough manurial treatment before planting. However, every single plant therein showed symptoms of the disease.

General leaf roll infection was also observed in fields grown by planters with South African seed, whether certified or not. Fields planted with seed from other sources did not show the disease.

The question is to be taken up with the South African authorities.

Coconut Wilt

The wilt of coconuts mentioned in the Annual Report for 1949 was again observed this year in the coastal regions referred to in that report. In all cases the dark-red mite was found in large numbers on the underside of the wilting leaves. That mite has not yet received identification.

Quite a different type of wilt was observed on a few plants of Ceylon stock on an estate in the north of the island. The symptoms exhibited were observable on the older leaves first, then working inwards to the younger ones. The symptoms resembled those of red ring disease, but the characteristic internal sign of that disease, namely a red band of tissue a short distance within the stem, was absent. One of the trees which were felled for examination showed a few small internal patches of reddened tissue, in which no nematodes were however seen. No definite opinion could be arived at as to the cause of the disease, which may be of the nature of bronze leaf wilt attributed to external physiological conditions, chiefly drought.

Disease of Filao

Death of the filao tree, *Casuarina equisetifolia* L. was reported in February by an estate in Flacq district. The disease was investigated and found to be the wilt caused by *Xanthomonas solanacearum* (Smith) Dowson, mentioned in the Annual Reports for 1948 and 1949.

In this case various patches in an 8–year–old plantation near the coast, approximating 3 acres on the aggregate, were noticed with most of the trees dead and dying.

The disease works very slowly inside such a woody tree as the filao, after infection has been picked up by the roots and, in the case of tall trees, may take a number of years before killing the plants.

It was observed in this connection that the death of the trees occurred according to the contour of the land, that is to say. in places where the disease occurs in badly-drained soil—even sometimes in sandy soil near the coast, but with a hard pan close to the surface resulting in rather marshy land in the hollows—the spread of infection follows closely the gradient of soil moisture content. The trees die first in the hollows, next succumb those along the slopes. It is therefore evident that filao trees in badly drained soil are more susceptible to the disease than otherwise. The disease occurs at various places in the filao belt around the coast, but is also encountered inland.

As control in this instance, it was recommended that all the trees in the infected area should be cut down, together with all the apparently healthy trees in a belt 30–50 ft. wide according to age, around the diseased patches and used as timber or fuel, the stumps and large roots being removed and turned into charcoal. It was also recommended that eucalyptus be planted in the cleared area, not tecoma, as was the desire of the Forest Department under which control the land in the affected area stands, because a wilt of that tree in the island is also suspected of being caused by *Xanthomonas solanacearum* (Smith) Dowson (Annual Report 1949, p. 70).

It was also suggested to keep a good growth of ' chiendent bourrique ' *(Stenotaphrum dimidiatum* (L.) Brongn.) in the affected area and not allow it to become close grazed, with the object of preventing the growth of wild solanaceous and other plants which could keep up the infection of the land. A return to filao could then be possible at a future time.

Other Diseases

On dwarf beans. Bad attacks of halo blight caused by *Pseudomonas medicaginis* var. *phascolicola* (Burk.) Dowson occurred at the Barkly and Royal Botanical Gardens Experiment Stations, and the seed produced was therefore withdrawn from sale. The longevity of the pathogen in such seed, as compared to that of the seed itself is to be tested.

Another bad attack of the same disease was also observed in a demonstration plot of the Food Production Board at Calebasses.

On tomato. A very severe attack of bacterial wilt caused by *Xanthomonas solanacearum* (Smith) Dowson in the demonstration plot just referred to completely ruined a previously most promising crop. The land had been mechanically cleared of trees a year before and had borne a first crop of onions. It is possible that diseased wild solanaceous or other plants had been growing on the land before it was cleared and that the mechanical treatment to which it was subjected helped to disseminate the pathogen over the area.

On onion. A disease of onions in seed-beds intended to provide the small bulbs known as " March setts " for general planting in the field was reported from Grand Sable in Grand Port by the Land Settlement Officer in December. It was investigated and found to be caused by *Sclerotium rolfsii* Sacc., a soil-inhabiting fungus. Measures of control were recommended.

On tea. A bad attack, attributed to *Cercosporella theae* Petch was observed on a tea plantation at Tamarind Falls on plants in the field as well as in the nurseries. The disease followed an exceptionally wet spell. Control measures were recommended.

On groundnuts. An attack of stem rot caused by *Sclerotium rolfsii* Sacc. occurred in a varietal plot at the Pamplemousses Experiment Station. The varieties Bunch, Virginia Bunch and Virginia seemed to be the most resistant, whilst the varieties Tennessee and Valencia proved very susceptible to the disease.

On Zinnia. Leaf spotting in a flower garden at Rose Hill caused by a species of nematode.

Work in Madagascar

During his leave in Madagascar, the Plant Pathologist, with the approval of the Government of Mauritius, had intended to devote a short part of his time in studying certain plant diseases still unknown in Mauritius, for example, the mosaic disease of manioc and the rosette disease of earthnuts.

After his arrival, he proceeded to the *Institut de Recherche Scientifique* at Tsimbazaza, where he was received by the Deputy Director, Dr. R. Paulian, the Director being then on leave in France. He takes the opportunity of this report to tender again his thanks to the Director for the kind attention shown to him during his visits to the Institute.

Unfortunately it was then mid-winter and nearly all the crops on the high central plateau had been reaped. He proceeded with Dr. Paulian on a special visit to about 90 kilometres from the capital, but in that region, too, all the crops had been reaped. It was evident that the work contemplated could not be effected at that time of the year, the best period for such work, in the opinion of Dr. Paulian, being in April, just after the rainy season and before the onset of winter.

Various questions concerning the importation of plants and plant parts from Madagascar were also discussed.

A visit was also paid to the Phytopathologist of the *Service de l'Agriculture,*" located at *Institut Pasteur,* Antananarivo.

Control of Imported Plant Material

Cane Quarantine Greenhouse. A few cases of smut disease were observed on the varieties Co.421 and C.P.34–120 growing in quarantine ; the diseased shoots were cut and destroyed.

As no disease new to the island had been observed on the canes during the two generations which they had passed in the greenhouse, they were released in November and planted at the Central Experiment Station, where they will be subjected to further observations under field conditions. The canes were also included in the gumming trial set up during the year.

Plant Inspection at the Customs and Airport. The inspection of imported plants and plant parts continued on the same lines as previously. Insects found in incoming planes were collected as usual and forwarded to the Entomological Division for identification.

Legislation. Proclamation No. 18 of 1951 was issued during the year, to prohibit the importation into Mauritius of the tomato plant, *Lycopersicum esculentum* Mill. from the island of Réunion, owing to the recent detection of a Trypetid fruit fly on the plant in that island.

Miscellaneous

Lectures in Plant Pathology were delivered by the Plant Pathologist to students of the College of Agriculture during the last term of the College Year.

Under a College Reorganisation Scheme which was put into effect during the year, the Assistant Plant Pathologist was appointed Lecturer in Agricultural Botany and Plant Pathology, and he was also entrusted with the supervision of the work of the Assistant Lecturer in Biology until the appointment of a Lecturer in Biology be made.

G. ORIAN,
Plant Pathologist.

Chemical Division

Staff

The Chemist returned from Overseas leave on the 9th December. The Assistant Chemist acted as Chemist and Officer in charge of the control of Fertilizers of the Supplies Control Department during the absence of the Chemist.

A Scientific Assistant was appointmed on the 3rd September. Owing to reduced staff the activities of the Division was considerably reduced during the year under review.

Soils

Vetivert is grown on certain types of soils in Réunion Island and the roots when distilled give a high yield of oil of fine quality.

At the request of the Director samples of soil and subsoil from Réunion were analysed in order to ascertain their mechanical composition and to find out how they compared with our soils.

Results of Analysis

Locality		Stones and Gravel	Coarse sand	Fine sand	Silt	Clay	Organic matter	Carbonate	Loss by solution	Combined water
Petite Ile	Soil	7·14	17·0	23·6	22·9	29·7	4·6	0·05	3·4	17·4
Piton Goyave	Subsoil	3·57	14·7	28·2	25·7	30·0	1·0	—	1·9	16·2
Ravine Cabris	Top soil... ...	2·78	5·7	31·0	24·7	24·4	9·0	0·15	5·1	13·5
	Lower soil ...	8·70	2·6	24·6	32·3	22·1	12·4	0.28	5·5	10·9
Berive	Soil	4·90	5·8	10·4	16·8	58·0	4·9	—	1·2	14·9
	Subsoil	0·96	3.7	19·7	21·9	49·0	1·3	—	1·6	13·4
Tampon	Soil	2·5	5 1	17.8	29·2	30·2	16·6	—	8·5	14·6
	Subsoil	—	5·3	18·3	55·4	12·0	4·8	0.1	7·1	20·2
Dos d'Ane	Top soil... ...	44·44	14·8	20·3	26·8	33.5	4·7	—	2·3	9·5
	Lower soil ...	5·0	2·2	29·3	46·6	10·4	9·3	0·09	7·8	17·0
	Top subsoil ...	4·0	10·2	22·2	31·5	32·9	1·6	—	1·0	9·6
	Lower subsoil ...	2·94	6·7	49·9	28·6	11·0	1·7	0·12	3·6	18·6

Fertilizers

(a) Guano phosphaté. Samples of guano phosphaté colected from differeat places of Rodrigues were analysed. The highest figure recorded was 17·07 per cent P_2O_5 and the lowest 1·36 per cent.

(b) A sample of bone phosphate from Tulear, Madagascar, was analysed with the following results:—

P_2O_5%	...	25·75
Fat%	...	2·93

(c) A sample of sea weed analysed at the request of the Land Settlement Officer with the following results:—

Moisture%	...	...	54·0
Nitrogen%	...	...	0·38
Phosphoric acid%		...	0·14
Potassium Oxide%		...	1·55

Milk

(a) The series of individual tests to determine the variations in the butter fat of cows of Friesland ascendency were continued. The highest figure recorded was 6·2 per cent and the lowest 2·1 per cent.

(b) The quarterly analysis of milk samples from the Government Dairy was performed as usual. The average figures are satisfactory.

Routine Analysis

Eight hundred and sixty-eight samples were received involving 950 determinations. The preparation and standardisation of acids and alkalis solutions for estates was carried as usual.

F. Berchon,
Acting Chemist.

Sugar Technology Division

Visits to Factories

Twenty-seven factories and nine distilleries were visited by the Sugar Technologist.

Advice was given when sought for and routine analytical work carried out for the factories and distilleries.

Investigations

A study was made in a sugar factory during the 1951 crop of the clarification of juice, boiling and centrifugalling of sugar.

The following conclusions were arrived at:—

(a) The quantity of lime to be added to the juice should be that which is just sufficient to neutralise the natural acidity of the juice. The pH of the clarified juice will then be around 6·9. Another indication will be given by the colour of the scums which will be black in the absence of an excess of lime and slightly yellowish in alkaline medium.

(b) Lime should not be added to the scums before filtration. If the pH of the clarified juice is around 6·9 the scums will filter well without addition of lime. The pH of the filtered juice will then be around 6·4 to 6·6.

(c) The filtered juice should be sent to the green juice and not to the clarified juice in order to reduce to a minimum the quantity of fats and waxes in the syrup.

(d) Soda ash should be added to the syrup in sufficient quantity to make good for the drop on pH in the evaporator that is to adjust the pH of the syrup to about 6·9.

(e) The grain size in the C massecuite at the time of centrifugalling should not be more than 0·4 mm.

(f) The purity of C sugar as it comes from the foreworkers should not be less than 85°. Being given good equipment, if it is not possible to have the purity of that sugar greater than 85° it means that the viscosity of the C masse cuite is high due to the presence of excessive amounts of calcium aconitate, fats and waxes or that the grain size is not sufficiently uniform.

(g) C sugar should be mixed with syrup and the magma used as footing for A and B massecuites. It is not necessary however to use C sugar magma only as footing for A and B massecuites. Occasional graining of A and B massecuites offer no disadvantage.

(h) Molasses should be diluted to at least 70° Brix (1 in 10 dilution method) of analysis heated to 90°C to 100°C and decanted. The bottom portion of about 5 per cent containing the precipitate of calcium aconitate should be removed from circulation. When the heat balance of the factory permits, it is advantageous to dilute B molasses to 60° Brix or even 50° Brix to facilitate the elimination of calcium salts.

The figures given in Table I give the relevant factory data before and after the application of the technique outlined above:—

TABLE I

	Cane crushed tons	*Mixed juice purity*	*Lime added /ton cane*	*Final molasses % cane*	*Clerget purity of final molasses*	*CaO in molasses grs/ton cane*
Before ...	66·514	82·2	1·070	3·55	41·6	426
After ...	52·749	83·1	0·736	3·43	34·7	—

	Purity of 3rd sugar	*pH of clarified juice*	*Soda ash added to syrup grs/ton cane*	*pH syrup before addition of soda ash*	*pH of syrup after addition of soda ash*
Before... ...	75—80	7·1	—	—	—
After	84—86	6·8	125 grs	6·4	6·9

Cane Fats and Waxes

Samples of scums from eleven sugar factories were analysed and found to contain on an average 3 per cent of waxes and 2 per cent of fats.

The products vary in colour from light green to dark brown. The full results are given in Table II.

TABLE II

CANE FATS AND WAXES DETERMINATIONS

Name of Factory	*Type of filter*	*Filter cake % cane*	*Wax % filter cake*	*Fat % filter cake*	*Wax and Fat% Filter cake*	*Wax % Cane*	*Fat % Cane*	*Wax and Fat % cane*
Trianon	Vacuum	2·72	3·6	4·0	7·6	0·098	0·109	0·207
Mon Loisir	Vacuum	3·20	3·2	2·2	5·4	0·102	0·070	0·172
Union Flacq	Vacuum	2·20	2·2	1 8	4·0	0·048	0·040	0·088
Labourdonnais	Filter press	1·75	2·8	3·3	6·1	0·049	0·058	0·107
Solitude	Vacuum	2·00	3·2	1·9	5·1	0·064	0·038	0·102
Queen	Filter press	1·70	2·2	2·3	4·5	0·037	0·039	0·076
Beau Champ	Vacuum	1·87	2·9	2·7	5·6	0·054	0·050	0·104
St. Antoine	Filter press	1·71	4·3	2·3	6·6	0·074	0·039	0·113
Highlands	do.	1·75	2·3	2·4	4·7	0·040	0·042	0·082
Médine	do.	1·86	3·9	3 9	7·8	0·073	0·073	0·146
Reunion	do.	1·19	2·9	2·1	5·0	0·035	0·025	0·060

Alcohol

The routine control of alcohol for export was continued. One thousand one hundred and forty samples were analysed and graded prior to export. Eight million, seven hundred and sixty-four thousand litres of 94°G.L. alcohol were exported to the United Kingdom.

Determination of Ash % Dry Bagasse

Ash per cent dry bagasse was determined at four different periods during the crop at one factory. It was found to vary between 2·6 per cent and 2·4 per cent.

Control of Molasses for Export

The control of the quality of molasses for export was effected for account of four firms who have exported molasses in drums during the year. The control of the quality of molasses exported in bulk has also been started.

Factory Data

Final figures were received from twenty-seven factories that operated during the last crop. The highest production by one factory was 35,800 metric tons, the lowest 8,400 metric tons, and the average 17,900 metric tons. Other results are shown in Table III.

TABLE III

AVERAGE CROP RESULTS 1946–51

Year	*Sucrose percent cane*	*Fibre percent cane*	*Mill extraction*	*Sucrose in sugar percent cane*	*Reduced Boiling House recovery*	*Boiling House efficiency*	*No. of crushing hours per day*
1946	13·56	12·6	94·9	11·35	88·0	98·7	15·0
1947	14·37	12·5	94·9	12·26	87·8	98·7	18·2
1948	14·31	12·1	94·8	12 22	88·1	98·8	19·4
1949	14·33	12·0	94·7	12·19	87·7	98·5	19·8
1950	14·14	11·8	94·8	12·05	88·5	99·0	19·9
1951	13·03	11·8	94·6	10·94	88·2	98·6	19·3

Fibre Determination in the Furcraea gigantea leaf

When a butt or a tip is left on the leaf after decortication, it is necessary to determine the fibre lost in the butt or tip as well as the loss in the residue in order to arrive at the percentage recovery of fibre. If the percentage of fibre corresponding to the percentage length of leaf is known then the fibre lost in butt or tip per cent fibre in leaf can be calculated for any length of butt or tip and any length of leaf.

The fibre distribution in *F. gigantea* leaves was determined by the writer on ten leaves from 4′6″ to 6′ long. The leaves were beaten with a wooden hammer, the fibre was washed free of connective leaf tissue, dried, cut in sections and the weight of each section was ascertained.

TABLE IV

FIBRE DISTRIBUTION IN F. GIGANTEA LEAVES

% length of leaf	*% total fibre*
12·5 butt end ...	16
25·0	32
37·5	48
50·0	64
62·5	77
75·0	87
87·5	95
100 0 tip end... ...	100

From the above, it is easy to calculate the probable loss from either butts or tips:—

e.g. Length of leaf 64″
Loss sf 4″ butt = $4/64 \times 16/12{\cdot}5 \times 100$
= 8% of tota fibre in leaf.
Loss of 4″ tip = $4/64 \times 5/12{\cdot}5 \times 100$
= 2·5% of total fibre in leaf

Determination of Industrial Loss

A sample of leaves weighing 100 kilos was taken in all cases. The fibre recovered and the fibre in the residue was weighed after retting when necessary, washing, drying, and brushing. The fibre lost in the butts was calculated, using the table of fibre distribution given in the foregoing section. The results of these experiments are given in Table V.

Effect of Leaving the butt end of F. gigantea Leaves Undecorticated

The *gigantea* leaf contains a certain percentage of short fibres which are scraped off into the residue and lost when the butt end is decorticated. If, however, the butt end is not decorticated all the fibre therein is lost. It has therefore been deemed interesting to determine what is the percentage of the leaf length on the butt end which can be left undecorticated without increasing thereby the industrial loss occurring when both ends of the leaf are scraped. The experiments were carried out in the same manner as already outlined and the results obtained are given in Table VI.

TABLE V

Industrial loss of Fibre when Decorticating F. Gigantea leaves in various Types of Decorticators

Type of Decorticator	Fibre % leaf	Fibre lost in residue		Fibre lost in butts		Fibre recovered		Average length		Remarks
		% leaf	% fibre in leaf	% leaf	% fibre in leaf	% leaf	% fibre in leaf	of butt	of leaf	
Raspador	3·00	0·24	8·0	—	—	2·76	92·0	—	4′8″	—
Souchon 1950 model	3·65	0·21	6·0	—	—	3·44	94·0	—	4′9″	—
Humbert do.	3·80	1·25	33·0	—	—	2·55	67·0	—	4′6″	—
Humbert modified by Staub, 1950	3·40	0·88	26·0	—	—	2·50	74·0	—	4′6″	—
	3·02	0·48	16·0	0·30	10·0	2·24	74·0	4″	4′6″	—
Robev double drum pilot decorticator	3·87	0·87	22·5	0·89	23·0	2·10	54·5	8½″	3′10″	*

*Injection water used at the rate of 2,000 gallons per hour.

TABLE VI

Effect of Leaving the Butt end of F. Gigantea Undecorticated

Variety	Total fibre		Loss in				Fibre recovered		Length of		
			Residue		Butt						
	% leaf	% fibre in leaf	% leaf	% fibre in leaf	% leaf	% fibre in leaf	% leaf	% fibre in leaf	Butt	Leaf	Butt % length of leaf
Aloes Malgache...	2·86	100	0·72	25	—	—	2·14	75	—	6′	—
	3·00	100	0·50	17	0·28	10	2·22	73	6″	6′	8·3%
	3·15	100	0·62	20	0·41	13	2·12	67	7½″	6′ 1″	10·3%
	2·76	100	0·41	15	0·44	16	1·91	69	9″	5′11″	12·6%
Common Aloe ...	3·40	100	0·88	26	—	—	2·50	74	—	4′ 6″	—
	3·02	100	0·48	16	0·30	10	2·24	74	4″	4′ 6″	7·8%
	3·72	100	0·63	17	0·67	18	2·42	65	8″	4′ 8″	14·3%

The Decorticator used was a Humbert decorticator as modified by the writer.

It appears from this Table that when dealing with *F. gigantea* leaves in the Humbert decorticator as modified by the writer decortication by the tip end only and discarding 8 per cent of the undecorticated leaf the butt end gives the same percentage fibre recovery as when decortication is effected completely. It can also be inferred that if after decorticating the leaf by the tip end, leaving a butt of length equal to 8 per cent of the leaf length, that butt could then be decorticated without an accompanying loss of fibre, the recovery of the fibre per cent fibre in leaf would be increased by some 10 per cent bringing the total recovery to about 84 per cent.

The importance therefore of starting decortication by the tip end in the main decorticator and finishing by decortication of the remaining butt in an auxiliary decorticator is therefore evident.

Breaking Stress of F. gigantea fibre

This was determined on individual fibres by suspending weights to the test piece, loading being effected by increments of 5 grains. The test length between the knots was 5 cms. 20 cms of the test fibre was weighed and its cross section determined assuming a specific gravity of 1·5.

The fibres selected were all long fibres from the middle portion of the strands.

Fibres tested in the same series came from the same leaf.

The results which are given in Tables VII, VIII and IX show that:—

(a) the breaking stress of unretted fibres from the Humbert scraper is high and relatively constant. The fibres are therefore generally sound ;

(b) the breaking stress of retted fibres from the Raspador and the Souchon scraper (which is an automatic raspador) is erratic. The same series shows widely different breaking stresses indicating mechanical damage in the scraper of those fibres which have a low tensile strength. In other series, the breaking stress is constantly low indicating deterioration of the fibre through bad retting ;

(c) individual high values for the breaking stress of retted fibre show that retting if properly conducted does not necessarily damage the fibres..

TABLE VII

BREAKING STRESS OF F. GIGANTEA FIBRE (DECORTICATED ONLY)

Type of Scraper : Humbert

Series	*Group*	*Fibre cross-sectional area sq. cm. × 10⁻⁶*	*Breaking load grains*	*Fibre tensile strength Kgs / mm²*
1	A	8·7	445	51·2
	B	8·0	385	48·1
	C	6·0	365	60.8
2	A	7·3	445	60·9
	B	7·3	430	58·7
	C	6·7	390	58·2
3	A	8·7	400	45·9
	B	7·3	390	53·4
	C	6·7	365	54·5

TABLE VIII

BREAKING STRESS OF F. GIGANTEA FIBRE (decorticated and retted)

Type of Scrape : Raspador

Series	*Group*	*Fibre cross-sectional area sq. cm. × 10⁻⁵*	*Breaking load grains*	*Fibre tensile strength, Kgs/mm²*
1	A	6·0	60	10·0
	B	5·3	65	12·3
	C	5·3	80	15·1
2	A	6·7	395	58·9
	B	6·7	305	45·5
	C	6·0	225	37·5
3	A	6·7	185	27·6
	B	6·0	365	60·8
	C	6·0	265	44·2

TABLE IX

BREAKING STRESS OF F. GIGANTEA FIBRE (decorticated and retted)

Type of Scraper : Souchon

Series	*Group*	*Fibre cross-sectional area sq. cm. × 10⁻⁵*	*Breaking load grains*	*Fibre tensile strength Kgs / mm²*
1	A	5·3	65	12·3
	B	5·3	90	17·0
	C	5·3	125	23·6
2	A	6·0	365	60·8
	B	6·0	380	63·3
	C	5·3	215	40·6
3	A	6·0	305	50·8
	B	6·0	405	67·5
	C	6·0	190	31·6

Hebiscus cannibinus

Seed of this fibrous plant have recently been obtained from Nigeria where high yields of fibre per acre of land have been obtained.

Preliminary planting trials are under way.

Manufacture of animal feedingstuffs

The manufacture of feeding mixtures was carried on at the Maize Mill. Maize, poonac, dholl, molascuit, etc., were used in the mixture. The production amounted to 455 tons.

Manufacturing data are given in Tables X and XI.

Mixing, cubing and pelletting machines are on order.

Processing of Groundnuts

Two hundred and sixty-nine tons of groundnuts were received at the Maize Mill for the purpose of selection for seeds.

One hundred and sixty-six tons were kept as seeds and the balance decorticated, dried and sent to Innova Oil Mill for crushing.

Table XII shows relevant data.

Yeast Factory

7,800,000 yeast tablets have been manufactured during the year. New machines have been ordered with a view to increasing the output to meet the rising demand for yeast tablets.

TABLE X

STATEMENT OF "ANIMAL FEEDING STUFF" PROCESSED DURING THE CALENDAR YEAR 1951

	Kilogs	Kilogs	Kilogs	Kilogs
Receiving Department :—				
Stock on 1.1.51 :—				
Beans	126,640			
Dholl	15,320		141,960	
Purchases :—				
Poonac	176,625			
Molasses	19,520			
Bagassillo	33,535			
Dholl	59,650			
Groundnut cakes ...	26,443			
Flour (sweepings)...	1,769		317,542	
To Milling Department :—				
Beans	50,045			
Dholl	63,710			
Poonac	54,725			
Groundnut ...	11,250	179,730		
To Mixing Department :—				
Flour (sweepings)..		1,750		181,480
To Molascuit Mixing Department :—				27,950
To Sales :—				
Poonac	4,550			
Groundnut cake ...	5,000			9,550
Balance :—				
Beans	76,595			
Dholl	11,260			
Poonac	117,350			
Molasses	95			
Bagassillo	25,010			
Groundnut cake ...	10,193			
Flour (sweepings)...	19			240,522
			459,502	459,502
Milling Department :—				
From Receiving Department :				
Beans	50,045			
Dholl	63,710			
Poonac	54,725			
Groundnut cake ...	11,250	179,730		

TABLE X—*Continued*

To Flour Store :—	*Kilogs*	*Kilogs*	*Kilogs*
Beans	48,925		
Dhool	62,485		
Poonac	54,700		
Groundnut cake ...	11,250		
			177,360
Industrial loss ...			2,370
		179,730	179,730
Molascuit Mixing Department :—			
From Receiving Department.			
Molasses	19,425		
Bagassillio ...	8,525		
		27,950	
To Molascuit Department :—			
From Molasses Mixing Department.			
Molascuit			27,530
Industrial loss ...			420
		27,950	27,950
Molascuit Department :—			
From Molasses Mixing Department.			
Molascuit		27,530	
To Mixing Dept.			24,300
To Loss (damaged)..			50
Balance			3,180
		27,530	27,530
Flour Store :—			
Stock on 1st January 1951.			
Beans	14,830		
Dholl	5,500		
Poonac	59		
Groundnut	520		
Beans bran... ...	640		
	21,549		
From Milling Department			
Beans	48,925		
Dholl	62,485		
Poonac	54,700		
Groundnut	11,250		
	177,360		

TABLE X—*Continued*

	Kilogs	*Kilogs*	*Kilogs*
To Mixing Department :—			
Beans	58,785	198,909	
Dholl	43,975		
Poonac	52,865		
Groundnut	8,700		
Beans bran... ...	640		
			164,965
Balance :—			
Beans	4,970		
Dholl	24,010		
Poonac	1,894		
Groundnut	3,070		
			33,944
		198,909	198,909
Mixing Department :—			
From Ground Maize Store.			
Maize Bran ...	147,750		
Maize Flour ...	116,485		
From Receiving Department :—			
Flours (sweepings)...	1,750		
From Flour Store :—	164,965		
From Malascuit Department	24,300		
		455,250	
To "Animal Feeding Stuff" Department :—	—	—	455,200
Industrial Loss ...	—	—	50
		455,250	455,250
"Animal Feeding Stuff" Department :—			
Stock on 1.1.51. ...	14,450		—
From Mixing Department.	455,200		—
		469,650	—
To Sales		—	468,350
To Balance ...		—	1,300
		469,650	469,650

TABLE XI

STATEMENT OF MAIZE PROCESSED DURING THE CALENDAR YEAR 1951

	Kgs.	*Kgs.*
Receiving Department :—		
Stock on 1.1.51	Nil	—
Purchases	250,000	—
To Drying Department	—	248,670
To Dry Maize Store	—	1,330
	250,000	250,000

TABLE XI—*Continued*

	Kilogs	*Kilogs*
Drying Department :—		
From receiving Department	248,670	—
To Dry Maize Store	—	230,644
Loss through evaporation	—	18,026
	248,670	248,670
Dry Maize Store :—		
Stock on 1.1.51...	Nil	—
From Receiving Department	1,330	—
From Drying Department	230,644	—
To Milling Department	—	193,288
To Stack Loss	—	8,500
Balance...	—	30,186
	231,974	231,974
Milling Department :—		
From Dry Maize Store	193,288	—
To Ground Maize Store	—	184,980
Industrial Loss	—	8,308
	193,288	193,288

GROUND MAIZE STORE

	Maize					
	Rice	*Bran*	*Flour*	*Rice*	*Bran*	*Flour*
Stock on 1.1.51	56,880	166,435	—	—	—	—
From Milling Department ...	—	—	184,980	—	—	—
To Sales	—	—	—	55,185	1,100	25
To Mixing Dept. (Animal Feeding Staff	—	—	—	—	147,750	116,485
To Stack Loss	—	—	—	1,695	17,585	—
Balance	—	—	—	—	—	68,470
TOTAL ...	56,880	166,435	184,980	56,880	166,435	184,980

Crushing of Dholl : 9,765 kilogs for Government Dairy.

Crushing of Groundnut Cake : 30,000 kilogs for Government Dairy.

Crushing of Poonac : 4,500 kilogs for Animal Husbandry Officer.

Crushing of Wheat Bran : 1,285 kilogs for Messrs. Merven & Co.

Crushing of Salted Fish : 589 kilogs for Breeders' Club.
1,769 kilogs for Messrs. Emmanuel Cadet & Co.

TABLE XII

STATEMENT OF GROUNDNUTS PROCESSED DURING THE CALENDAR YEAR 1951

	Kilogs	*Kilogs*
Receiving Department :—		
Stock on 1st January 1951 ...	1,566½	—
Purchases	267,731	—
To Shellers	—	67,553½
To Dryers	—	127,515
To Seeds Department ...	—	73,059
To Sales	—	1,085
To Balance	—	105
	269,297½	269,297½
Pods Drying Department :—		
From Receiving Department ...	127,515	—
To Dried Pods Department ...	—	119,157
Loss through evaporation ...	—	8,358
	127,515	127,515
Dried Pods Store :—		
From Drying Department ...	119,157	—
To Shellers	—	25,737
To Seeds Department ...	—	93,420
	119,157	119,157
Shelling Department :—		
From Receiving Department ...	67,533½	—
From Dried Pods Store ...	25,737	—
To Shelled Nuts Department ...	—	58,605
Shells	—	34,665½
	93,270½	93,270½
Nuts Department :—		
From Shelling Department ...	58,605	—
To Nuts Drying Department ...	—	44,399
To Dried Nuts Department ...	—	13,892
To Balance	—	314
	58,605	58,605
Nuts Drying Department :—		
From Nuts Department ...	44,399	—
To Dried Nuts Department ...	—	42,240
Loss through evaporation ...	—	2,159
	44,399	44,399

TABLE XII—*continued*

	Kilogs	*Kilogs*
Dried Nuts Department :—		
From Nuts Drying Dept. ...	42,240	—
From Shelling Department ...	13,892	—
To Granary	—	21,450
To Innova	—	26,400
To Balance	—	8,282
	56,132	56,132
Seeds Department :—		
From Receiving Department ...	73,059	—
From Dried Pods Store ...	93,420	—
To Granary	—	158,640
To Sales	—	5,435
To Balance	—	2,404
	166,479	166,479

Finance

Financial statements concerning the Manufacture of Animal Feeding Stuffs, the processing of groundnuts and the production of yeast tablets are given in Tables.

TABLE XIII

YEAST FACTORY

Manufacturing Account for the Year ended 30.6.51.

1950 July 1st To Factory Charges :—	*Rs.*	*c.*		*1951* June 30th	*Rs.*	*c.*
				By cost of production ...	20,561	96
Coal	850	04				
Hardware	4,986	66				
Transport	2,390	20				
Wages and W. B. ...	12,517	27				
Inspector Boiler ...	61	50				
Firewood	1,454	03				
Electricity	589	33				
Other expenses	1,908	33				
Repairs	1,138	84				
Aloe Fibre Cloth ...	224	00				
Railways	1,831	26				
Empty drums	300	00				
			28,251 46			
Final stock	8,660	00				
Less initial stock ...	970	50				
	7,789	50				
			28,251 46			
Less Stock			7,789 50			
	TOTAL		20,561 96	TOTAL	20,561	96

TABLE XIV

YEAST FACTORY

Trading Account for the Year ended 30.6.51.

1951		Rs. c.	1951		Rs. c.
June 30th			June 30th		
To cost of production	....	20,561 96	By sales of Yeast Tablets	...	33,232 00
To Gross Profiit	... ...	12,670 04			
	TOTAL	33,232 00		TOTAL	33,232 00

TABLE XV

YEAST FACTORY

Profit and Loss Account for the Year ended 30th June, 1951.

1951		Rs. c.	1951		Rs. c.
June 30th			June 30th		
To Salaries and W.B.	...	2,720 00	By Gross Profiit	... ...	12,670 04
General Expenses...	...	740 91	Charge for transfer of Factory		8,000 00
Net profiit ...	... ...	17,209 13			
	TOTAL	20,670 04		TOTAL	20,670 04

TABLE XVI

RICHELIEU MAIZE MILL—Section : Special mixture for Animals

Manufacturing account for the year ended 30th June, 1951

1950				1951		
July 1st				June 30th		
		Rs. c.				Rs c.
To Stock (initial)	...	74,509 35		By cost of production.		68,093 23
Purchase ...	...	92,212 52				
TOTAL	...	166,721 87				
1951						
July 30th						
Less :—						
		Rs c.	Rs. c.			
Stock (final)	...	109,283 50	57,438 37			
Factory charges .—						
Wages (lab.)	...	5,881 33				
Wages (dockers)	...	275 28				
Transport ...	...	129 70				
Railways ...	...	460 53				
Electricity ...	...	802 04				
Fuel	...	723 51				
Repairs ...	...	400 20				
Travelling ...	...	796 98				
Hardware ...	...	921 66				
Lub. Oils ...	...	53 63				
Alœ thread ...	...	122 50				
Elec. bulbs ...	...	87 50				
			10,654 86			
	TOTAL	...	68,093 23		TOTAL	... 68,093 23

TABLE XVII

RICHELIEU MAIZE MILL

(Section : Special Mixture for animals)

Trading Account for the Year ended 30th June, 1951

1951		Rs.	c.	*1951*		Rs.	c.
June 30th				June 30th			
To cost of production	...	68,093	23	By sales of special mixture	...	76,270	91
Gross Profit	... ...	9,923	12	Work done :			
				Sieving of rice	... ...	1,433	44
				Grinding wheat bran	...	112	00
				,, dholl	... ...	200	00
				TOTAL	...	78,016	35
TOTAL	...	78,016	35	June By Gross Profit c/d	.....	9,923	12

TABLE XVIII

RICHELIEU MAIZE MILL

(Section : Special Mixture for Animals)

Profit and Loss Account for the Year ended 30th June, 1951

1951		Rs.	c.	*1951*		Rs.	c.
June 30th				June 30th			
To Administrative charges :				By gross profit b/d.	... ...	9,923	12
Salaries and W.B.	...	2,745	00				
Refund Contract Tickets	...	39	00				
Allowances	... ...	1,171	99				
General expences	... ...	329	50				
Net profit	... ...	5,637	63				
TOTAL	...	9,923	12	TOTAL	...	9,923	12

TABLE XIX

RICHELIEU MAIZE MILL—(Section : Processing of Groundnuts)

Trading Account for the year ended 30th June 1951

1951				*1951*			
June 30th	Rs.	c.		June 30th			
To wages (lab)	... 1,796	32		By amount claimed for processing.			
Salaries	... 12	28				Rs.	c.
			Rs. c.	Groundnuts	... ...	6,024	05
			1,808 60				
Travelling	... ...		168 21				
Transport	... ...		96 00				
Repairs	... ...		445 00				
Lub. Oils	... ...		34 80				
Sundry expenses	... ...		338 75				
Laboratory expenses	...		180 00				
Gross profit c/d	... ...		2,952 69				
TOTAL	...		6,024 05	TOTAL	...	6,024	05
				1951			
				June 30th			
				By Gross Profit b/d	...	2,952	69

TABLE XX

RICHELIEU MAIZE MILL—(Section : Processing of Groundnuts)

Profit and Loss Account for the year ended 30th June 1951

1951		Rs.	c.	1951		Rs.	c.
June 30th				June 30th			
To Refund of.				By Gross Profit b/d		2,952	69
Contract Tickets		27	00				
Salaries and W. B.		1,601	25				
Allowances		293	00				
Travelling		278	64				
Net Profit c/d		752	89				
TOTAL		2,952	69	TOTAL		2,952	69
				June 30th			
				By net Profit b/d		752	80

S. STAUB,
Sugar Technologist and Manager Maize Mill.

Land Settlement Division

Pilot Land Settlement Scheme—General

The Pilot Land Settlement Scheme was approved by the Development Authority and the Mauritius Legislative Council during the first half of 1950. The Secretary of State's approval of the scheme was received in August, 1950. Thereafter negotiations for the purchase of suitable lands were proceeded with by the Director of Public Works and in due course the undernoted areas became available for the implementation of the Pilot Land Settlement Scheme.

Petit Sable. An area of 258 acres of Curatelle land situated on the east coast at Petit Sable was purchased by Government.

Crown Land Richelieu. This being Government land no purchase was necessary. Arrangements were made for the Food Production Board, whose tenants occupied allotments on the land, to hand over the area for Land Settlement purposes on the 31st of December, 1951.

Terre Rouge. This area forms the main part of the Pilot Scheme and the greater part of the 300 acres required for this settlement have been purchased. It is hoped that the balance of the land required will be acquired in the near future. The land in this area because of lack of irrigation water has hitherto been very largely under scrub and has not been cultivated except for small portions on which crops like manioc and maize have been grown during the summer rains. Considerable quantities of rocks and boulders are strewn over this land.

The Land Settlement Officer returned from overseas leave at the end of April 1951. Meetings of the Land Settlement Advisory Committee were resumed and a number of matters including housing on small holdings were dealt with. A Land Settlement Selection Committee to deal with the selection of applicants for small holdings was formed. Staff consisting of an Assistant Land Officer, Surveyor, Assistant Surveyor, Clerk and Typist were appointed in September, 1951, and the Land Settlement Staff was attached to the Department of Agriculture where a building was provided for the Land Settlement Office.

Development Progress

Petit Sable was the first settlement under the Pilot Scheme to be tackled. The cutting of trees was carried out by the Forest Department and the mechanical unit of the Food Production Board carried out works including destumping, ridging, road tracing, rooting and rock removal. New storm drains were constructed by hand labour as were also the new field drains. The cleaning of the main water channels which had become silted up was carried out by the mechanical unit except for some wet areas where it was impossible for the machine to operate.

A considerable number of applicants for the settlement were interviewed and reported upon.

Tenants were selected by the Land Settlement Selection Committee and holdings and allotments allocated.

The settlement is made up of units as undernoted:—

10 residential smallholdings.

3 bare-land smallholdings.

40 allotments.

85 onion plots.

Smallholders are allowed to plant 50 per cent of their holdings with sugarcane crop and the planting of this crop has been nearly completed. The tenants are now busy with the cultivation of the remainder of land for food crops. A crop of seed onions has already been harvested from the onion plots. Tenants have formed themselves into a smallholders Co-operative Credit Society and are thus enabled to obtain loans on the security of their sugarcane crop from the Co-operative Central Bank.

The construction of dwelling houses on the scheme has been deferred until March when it is hoped to have the work carried out in conjunction with another special housing project. It is expected that a more satisfactory dwelling house will be obtained in this way.

The system of storm drains and water channels created, coupled with the planting of the steep slopes in accacia should make the settlement fairly safe from serious soil erosion.

Terre Rouge. The mechanical unit of the Food Production Board, consisting of two bulldozers with a rooter, has been operating on this land carrying out the work of removing scrub, rowing stones and rocks and rooting over a considerable area.

The Land Settlement Surveyor has been carrying out an irrigation survey of the area for the Public Works Department and when this work has been completed it will be possible for work on the irrigation canal to commence. It will be aproximately one year before irrigation water will become available for smallholding settlements at Terre Rouge but it is hoped to have a considerable number of holdings tenanted by selected applicants when the irrigation water is ready to flow.

Meanwhile the land cleared is being offered to small planters on a short term lease for the cultivation of food crops during the summer and large numbers of applicants are coming forward for this land.

Richelieu. Arrangements are being made for the land at Richelieu to be leased for a four months period for the growing of a groundnut crop. When this crop has been harvested the permanent smallholding scheme will be established.

Flat Island. A number of casualties in the goat stock at Flat Island have been caused by the parasite *Oestrus ovis* during the year, but recent methods of control carried out by the Senior Veterinary Officer give promise of success. A first consignment of goats were sold by auction at Port Louis in July.

J. BETT,
Land Settlement Officer.

Legislation

The following Ordinance and Proclamation were issued during the year:—

Ordinance No. 21—To provide for the levying of a special export duty on sugar exported from the Colony for the purpose of meeting the cost of the administration of the Central Board.

Proclamation No. 18—To prohibit the importation into Mauritius of the tomato plant *(Lycopersicum esculentum* Mill.) from the Island of Réunion.

5423/10/52—1,005